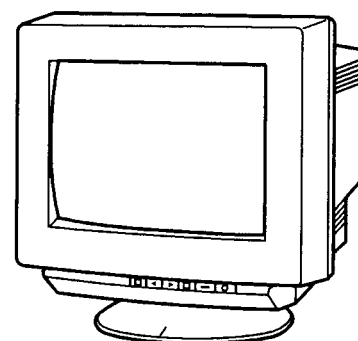# Service Manual
Multi-Scan Color CRT Display
MODEL TX-D1733 Series
Chassis No. HV5
Chassis Family No.17HV5

CONTENTS

Panasonic

⚠ **WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public.

It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.

Products powered by electricity should be serviced or repaired only by experienced professional technicians.

Any attempt to service or repair the product or products dealt within this service information by anyone else could result in serious injury or death.

SAFETY PRECAUTIONS

1 CAUTION:

No modification of any circuit should be attempted. Service work should only be performed after you are thoroughly familiar with all of the following safety checks and servicing guide lines.

2 SAFETY CHECK

Care should be taken while servicing this CRT display because of the high voltage used in the deflection circuits. These voltages are exposed in such areas as the associated flyback and yoke circuits.

3 FIRE & SHOCK HAZARD

3-1 Insert an isolation transformer between the CRT display and AC power line before servicing the chassis.

3-2 In servicing pay attention to original lead dress especially in the high voltage circuit. If a short circuit is found, replace all parts which have been overheated as a result of the short circuit.

3-3 All the protective devices must be reinstalled per original design.

3-4 Soldering must be inspected for possible cold solder joints, frayed leads, damaged insulation, solder splashes or sharp solder points. Be certain to remove all foreign material.

4 LEAKAGE CURRENT COLD CHECK

4-1 Unplug the AC cord and connect a jumper between the two prongs on the plug.

4-2 Turn the CRT display power switch "on".

4-3 Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metallic part on the CRT display such as the metal frame, screwheads, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be 1.8 megohm minimum.

5 LEAKAGE CURRENT HOT CHECK

5-1 Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during this check.

5-2 Connect a 1500 ohm, 10 watt resistor, paralleled by a 0.15μF capacitor between each exposed metallic part and a good earth ground (as shown in Fig.1).

5-3 Use an AC voltmeter with 1000 ohm/volt or more sensitivity and measure the AC voltage across the combination 1500 ohm resistor and 0.15μF capacitor.

5-4 Move the resistor connection to each exposed metallic part and measure the voltage.

5-5 Reverse the polarity of the AC plug in the AC outlet and repeat the above measurement.

5-6 Voltage measured must not exceed 7.5 volt RMS, from any exposed metallic part to ground A leakage current tester may be used in the above hot check, in which case any current measured must not exceed 5.0 milliamp. In the case of a measurement exceeding the 5.0 milliamp value, a rework is required to eliminate the chance of a shock hazard.

Note: High voltage is present when this CRT display is operating. Always discharge the anode of the picture tube to the display chassis to prevent shock hazard.
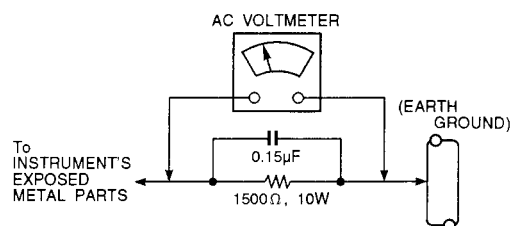

Fig.1

6 IMPLOSION PROTECTION

Picture tubes are equipped with an integral implosion protection system, but care should be taken to avoid damage and scratching during installation. Use only Panasonic replacement picture tubes.

7 X-RADIATION

WARNING : The only potential source of X-Radiation is the picture tube. However when the high voltage circuitry is operating properly there is no possibility of X-Radiation problem. The basic precaution which must be exercised is to keep the high voltage at the following factory-recommended level.

Note: It is important to use an accurate periodically calibrated high voltage meter.

7-1 The procedure for adjustment high voltage is as shown on page 27.

7-2 If can not be adjust 25.0 kV at immediate service is required to prevent the possibility of premature component failure.

7-3 To prevent X-Radiation possibility it is essential to use the specified picture tube.

IMPORTANT SAFETY NOTICE

There are special components used in this CRT displays which are important for safety. These parts are identified by the international symbol △ on the schematic diagram and on the replacement parts list. It is essential that these critical parts should be replaced with manufacture's specified parts to prevent X-RADIATION, shock, fire or other hazards. Do not modify the original design or this will void the original parts and labor guarantee.

1. OUTLINE

TX-D1733 is a 17 inch multi-scan color CRT display with the following features.

•Multi scan •Digital control •OSD (On Screen Display) control •Power saving •High contrast and fine dot pitch CRT

2. FEATURES

2-1 Power Saving

, • This monitor is equipped with power management circuitry conforming to the VESA standard.

• Depending on the signal from a computer, switching occurs between four modes to minimize non-essential energy consumption.

2-2 OSD (on screen display) function

• OSD (5 languages) is a man-machine interface. Any one is able to set up the picture as he like through OSD menu.

2-3 Self Test function

• With a touch of a button (1) the self-test function quickly identifies a "no signal condition." This time saving function simplifies diagnostics and prevents unnecessary service calls.

2-4 Power Supply with high power factor

• Power Supply with high power factor enables to utilize AC power efficiently meeting IEC555-2 (Line Harmonics).

2-5 Ergonomic design

• Low emission design to meet MPR II
• ESF (Electro static field) free coating on CRT

2-6 Multi scan with digital technology

• 8 bit micro computer controls the circuit operation to meet with wide range signal of f_H =30~69 kHz and f_v =50~160 Hz. So VGA640x350, VGA640x400, VGA640x480, SVGA800x600, 1024x768 and 1280x1024 mode are applicable.

2-7 3 Factory presets, (+5 Reservation), 13 user memories.

• 3 standard modes are preset at the factory.
• 5 modes are reserved at the factory.
• 13 user memories are available to set the users own timing and display information.

2-8 Flat Face and fine dot pitch

• Flat face CRT with a fine dot pitch of 0.27 mm provides for comfortable viewing.

2-9 Superior display performance

• Good focus by sophisticated gun and dynamic focus circuit
• High contrast CRT (TM=42.5%)
• Minimized distortion by correction circuit
• Good convergence
• Full scan image for graphics

2-10 Plug and Play

• VESA/DDC1 (Display Data Channel) compatible

SPECIFICATION

1. DIAGRAM
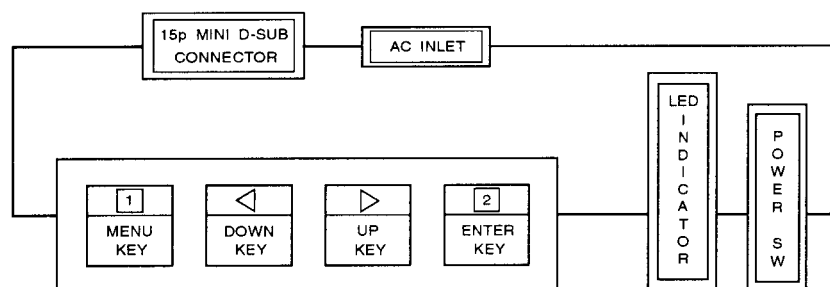
1.1 POWER SW, LED, 1-key (MENU), ◁-key (DOWN), ▷ -key (UP), and 2-key (ENTER) are located on the front panel.

1.2 Signal connector and AC inlet are located on the back side of the cabinet.

1.3 OSD menu includes the following function.

CONTRAST	BRIGHTNESS	DEGAUSS
H POSITION	H SIZE	V POSITION
V SIZE	V PIN-CUSHION	TRAPEZOID
PARALLELOGRAM	COLOR SELECT	

DISPLAY FREQUENCY VIDEO INPUT LEVEL
LANGUAGES RECALL.

※) CONTRAST can be directly controlled with ◁/▷ -key.

※) With sync signal, OSD menu appears by pushing 1-key.
Without sync signal, self test menu appears by pushing 1-key.

2. MECHANICAL SPECIFICATIONS

..... refer to the attached drawing

2.1 Dimension   Height : 415 mm (16.3") typ.
                 Width : 410 mm (16.1") typ.
                 Depth : 438 mm (17.2") typ.

2.2 Net Weight   : 17.0 kg (37.4 lbs) typ.

3. CONNECTORS

3.1 Signal connector: 15P Mini D-Sub connector
3.2 AC inlet: CEE 22 typed connector

<15P Mini D-Sub   Pin assignment>

1 ... RED   6 ... GROUND   11 ... GROUND
2 ... GREEN   7 ... GROUND   12 ... SDA (DDC)
3 ... BLUE   8 ... GROUND   13 ... H. SYNC.
4 ... GROUND   9 ... – (OPEN)   14 ... V. SYNC.
5 ... GROUND (DDC)   10 ... GROUND   15 ... SCL (DDC)

4. CRT SPECIFICATIONS

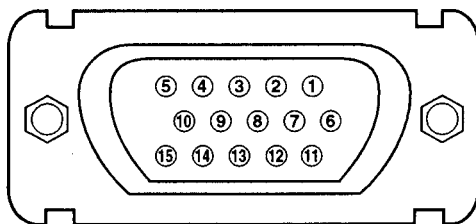| Part No.	M41KXH140X
Type	17", 90°, 29ø, in-line gun (15.7" Viewable)
Dot Pitch	0.27 mm
Phosphor	R, G, B Short Persistence (Hi-Eu RED)
CIE Color point	Red x: 0.635 (± 0.020) y: 0.333 (± 0.020)
	Green x: 0.280 (± 0.020) y: 0.595 (± 0.020)
	Blue x: 0.152 (± 0.015) y: 0.063 (± 0.015)
Bulb	DARK TINT
Face	NEW AGRAS COAT
Total Transmission	42.5 %

5. ELECTRICAL SPECIFICATIONS

5.1 Standard conditions ... Except special items

Display image	Green, full "H" characters with a border line. (7 x 9 dots) Video siganl : 100% duty Display area : 300 mm x 225 mm
Video signal level	0.7 Vpp
Contrast, Brightness	Contrast : Max., Brightness : detent point
Ambient Temperature	20 ± 5°C (68 ± 9°F)
Input Voltage	AC 120 V, 60 Hz
Terrestrial magnetism	Vertival field : northern hemisphere field (40μT) Horizontal field : no field
Viewing direction	Parallel to the CRT axis
Measurements	After an initial warming up time of more than 30 minutes.
Ambient light	200 ± 50 lX
Display mode	1024 x 768 (60.02 kHz, 75.03 Hz)

5.2 POWER

5.2.1 Power supply ... Commercial power source

Input voltage	AC 90 - 132 V, AC 198 - 264 V
Power frequency	50/60 Hz
Input current	1.5 A Max. (100V) (※1)
Inrush current (at 20° C)	40 A op
Power consumption	100 W (Typ.)

(※1) Input current is reduced to about 60 % our current products by "High Power Factor" technology.

5.2.2 Power Management for Power Saving ...

Power saving system is designed based upon VESA DPMS standard (Version : 1.0)

1) Power consumption and recovery time.

*1 APM State	SIGNALS			MONITOR POWER CONSUMP- TION	RECOVERY TIME TO ON STATE	INDICATOR
	H. Sync	V. Sync	VIDEO			
ON	*3 NOR- MAL	*3 NOR- MAL	*2 ACTIVE	*4 100%	——	Green
STAND- BY	No Sync or *5 < 6 kHz	> 40 Hz	BLANK	< 30 W	< 4s	Yellow
SUS- PEND	>10 kHz	No Sync or *5 < 20 Hz	BLANK	< 30 W	< 4s	Yellow
OFF	No Sync or *5 < 6 kHz	No Sync or *5 < 20 Hz	BLANK	< 8 W	< 20s	Yellow

** The transition time from ON state to each APM state is 5 seconds minimum.

*1 : APM : Advanced Power Management.

*2 : Meas. Condition of power consumption for ON state.
DISPLAY IMAGE : WHITE full "H" characters with a border line (7 × 9 dots).

*3 : NORMAL : See "7.4 ACCEPTABLE TIMING".

*4 : Power Consumption is measured at AC 100-240V.

*5 : Power saving operation is done at least less than specified value in the list.

5.3 Standard timing (Standard mode)

• Following total 3 modes (5 modes) are preset (reserved) in the memory as standard timing at the factory.

• Fig-1 shows a definition of timing and signal level.

• Electrical performance is specified This SPECIFICATION is specified at STD (1024 x 768) mode unless otherwise mentioned. (MODE-2)

TIMING CHART

A	Period	
B	Blanking	
C	Sync Width	
D	Back Porch	
E	Active	
F	Front Potch	

Fig.2
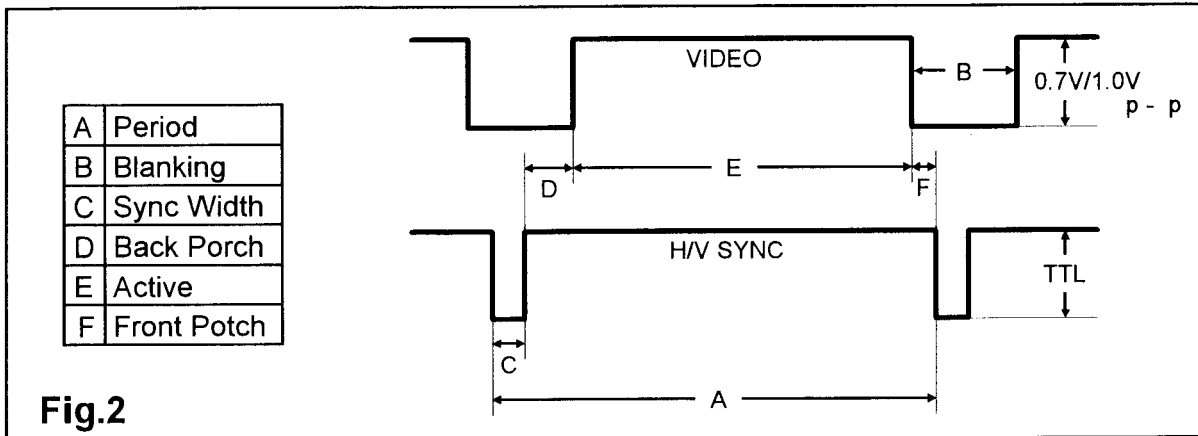
FOR PRESET

		MODE - 1	MODE - 2	MODE - 3
		640 × 480 (60)	1024 × 768 (75)	1280 × 1024 (60)
	DOT CLOCK	25.1745 MHz	78.7500 MHz	109.4695 MHz
	f H	31.4681 KHz	60.0229 KHz	63.7192 KHz
H	A - PERIOD	31.778 µs (800 dots)	16.660 µs (1,312 dots)	15.694 µs (1,718 dots)
	B - BLANKING TIME	6.356 µs (160 dots)	3.657 µs (288 dots)	4.001 µs (438 dots)
	C - SYNC WIDTH	3.813 µs (96 dots)	1.219 µs (96 dots)	1.425 µs (156 dots)
	D - BACK PORCH	1.907 µs (48 dots)	2.235 µs (176 dots)	2.174 µs (238 dots)
	E - ACTIVE TIME	25.423 µs (640 dots)	13.003 µs (1,024 dots)	11.693 µs (1,280 dots)
	F - FRONT PORCH	0.636 µs (16 dots)	0.203 µs (16 dots)	0.402 µs (44 dots)
	f V	59.9393 Hz	75.0286 Hz	59.9992 Hz
V	A - PERIOD	16.684 ms (525 lines)	13.328 ms (800 lines)	16.667 ms (1,062 lines)
	B - BLANKING TIME	1.430 ms (45 lines)	0.533 ms (32 lines)	0.596 ms (38 lines)
	C - SYNC WIDTH	0.064 ms (2 lines)	0.050 ms (3 lines)	0.047 ms (3 lines)
	D - BACK PORCH	1.049 ms (33 lines)	0.466 ms (28 lines)	0.502 ms (32 lines)
	E - ACTIVE TIME	15.254 ms (480 lines)	12.795 ms (768 lines)	16.071 ms (1,024 lines)
	F - FRONT PORCH	0.318 ms (10 lines)	0.017 ms (1 lines)	0.047 ms (3 lines)
	SYNC POLARITY(H/V)	Negative / Negative	Positive / Positive	Sync on green

FOR RESERVATION

		MODE - 4	MODE - 5	MODE - 6
		640 × 480 (75)	800 × 600 (75)	MAC-II (832 × 624)
	DOT CLOCK	31.5000 MHz	49.5000 MHz	57.2830 MHz
	f H	37.5000 KHz	46.8750 KHz	49.7248 KHz
H	A - PERIOD	26.667 µs (840 dots)	21.333 µs (1,056 dots)	20.111 µs (1,152 dots)
	B - BLANKING TIME	6.349 µs (200 dots)	5.172 µs (256 dots)	5.586 µs (320 dots)
	C - SYNC WIDTH	2.032 µs (64 dots)	1.616 µs (80 dots)	1.117 µs (64 dots)
	D - BACK PORCH	3.810 µs (120 dots)	3.232 µs (160 dots)	3.910 µs (224 dots)
	E - ACTIVE TIME	20.317 µs (640 dots)	16.162 µs (800 dots)	14.524 µs (832 dots)
	F - FRONT PORCH	0.508 µs (16 dots)	0.323 µs (16 dots)	0.559 µs (32 dots)
	f V	75.0000 Hz	75.0000 Hz	74.5500 Hz
V	A - PERIOD	13.333 ms (500 lines)	13.333 ms (625 lines)	13.414 ms (667 lines)
	B - BLANKING TIME	0.533 ms (20 lines)	0.533 ms (25 lines)	0.865 ms (43 lines)
	C - SYNC WIDTH	0.080 ms (3 lines)	0.064 ms (3 lines)	0.060 ms (3 lines)
	D - BACK PORCH	0.427 ms (16 lines)	0.448 ms (21 lines)	0.784 ms (39 lines)
	E - ACTIVE TIME	12.800 ms (480 lines)	12.800 ms (600 lines)	12.549 ms (624 lines)
	F - FRONT PORCH	0.027 ms (1 lines)	0.021 ms (1 lines)	0.020 ms (1 lines)
	SYNC POLARITY(H/V)	Negative / Negative	Positive / Positive	Negative / Negative

FOR RESERVATION

		MODE - 7	MODE - 8
		1024 × 768 (70)	1024 × 768 (72)
	DOT CLOCK	75.0000 MHz	75.0000 MHz
H	f H	56.4759 KHz	57.8704 KHz
	A - PERIOD	17.707 μs (1,328 dots)	17.280 μs (1,296 dots)
	B - BLANKING TIME	4.053 μs (304 dots)	3.627 μs (272 dots)
	C - SYNC WIDTH	1.813 μs (136 dots)	1.920 μs (144 dots)
	D - BACK PORCH	1.920 μs (144 dots)	1.387 μs (104 dots)
	E - ACTIVE TIME	13.653 μs (1,024 dots)	13.653 μs (1,024 dots)
	F - FRONT PORCH	0.320 μs (24 dots)	0.320 μs (24 dots)
V	f V	70.0694 Hz	71.7995 Hz
	A - PERIOD	14.272 ms (806 lines)	13.928 ms (806 lines)
	B - BLANKING TIME	0.673 ms (38 lines)	0.657 ms (38 lines)
	C - SYNC WIDTH	0.106 ms (6 lines)	0.104 ms (6 lines)
	D - BACK PORCH	0.513 ms (29 lines)	0.501 ms (29 lines)
	E - ACTIVE TIME	13.599 ms (768 lines)	13.271 ms (768 lines)
	F - FRONT PORCH	0.053 ms (3 lines)	0.052 ms (3 lines)
	SYNC POLARITY(H/V)	Negative / Negative	Negative / Negative

FOR ADJUSTMENT

		HV5 - 1	HV5 - 2	HV5 - 3
	DOT CLOCK	22.6000 MHz	40.2480 MHz	64.0400 MHz
H	f H	29.5039 KHz	39.0000 KHz	53.9966 KHz
	A - PERIOD	33.894 μs (766 dots)	25.641 μs (1,032 dots)	18.520 μs (1,186 dots)
	B - BLANKING TIME	8.496 μs (192 dots)	3.926 μs (158 dots)	4.497 μs (288 dots)
	C - SYNC WIDTH	4.115 μs (93 dots)	1.491 μs (60 dots)	1.718 μs (110 dots)
	D - BACK PORCH	2.788 μs (63 dots)	2.336 μs (94 dots)	2.186 μs (140 dots)
	E - ACTIVE TIME	25.398 μs (574 dots)	21.715 μs (874 dots)	14.022 μs (898 dots)
	F - FRONT PORCH	1.593 μs (36 dots)	0.099 μs (4 dots)	0.593 μs (38 dots)
V	f V	48.0520 Hz	77.0751 Hz	105.0518 Hz
	A - PERIOD	20.811 ms (614 lines)	12.974 ms (506 lines)	9.519 ms (514 lines)
	B - BLANKING TIME	0.915 ms (27 lines)	0.744 ms (29 lines)	0.482 ms (26 lines)
	C - SYNC WIDTH	0.102 ms (3 lines)	0.103 ms (4 lines)	0.037 ms (2 lines)
	D - BACK PORCH	0.712 ms (21 lines)	0.513 ms (20 lines)	0.352 ms (19 lines)
	E - ACTIVE TIME	19.896 ms (587 lines)	12.231 ms (477 lines)	9.038 ms (488 lines)
	F - FRONT PORCH	0.102 ms (3 lines)	0.128 ms (5 lines)	0.093 ms (5 lines)
	SYNC POLARITY(H/V)	Negative / Negative	Negative / Negative	Negative / Negative

FOR ADJUSTMENT

		HV5 - 4
	DOT CLOCK	93.4300 MHz
H	f H	69.9850 KHz
	A - PERIOD	14.289 μs (1,335 dots)
	B - BLANKING TIME	3.329 μs (311 dots)
	C - SYNC WIDTH	1.092 μs (102 dots)
	D - BACK PORCH	1.820 μs (170 dots)
	E - ACTIVE TIME	10.960 μs (1,024 dots)
	F - FRONT PORCH	0.417 μs (39 dots)
V	f V	165.0590 Hz
	A - PERIOD	6.058 ms (424 lines)
	B - BLANKING TIME	0.457 ms (32 lines)
	C - SYNC WIDTH	0.043 ms (3 lines)
	D - BACK PORCH	0.343 ms (24 lines)
	E - ACTIVE TIME	5.601 ms (392 lines)
	F - FRONT PORCH	0.071 ms (5 lines)
	SYNC POLARITY(H/V)	Negative / Negative

5.4 Acceptable timing

- If your timing is within following specification, this CRT display can automatically function with a certain size and position.

  Horizontal: Sync frequency: 30.0 ~ 69.0 kHz
  Blanking Time: $\geq 3.0\ \mu s$
  Back Porch: $\geq 1.25\ \mu s$
  Front Porch: $\leq$ Back Porch
  Sync Width: $\geq 1.2\ \mu s$

  Vertical: Sync frequency: 50.0 ~ 160.0 Hz
  Blanking Time: ≥ 0.5 ms
  Back Porch: ≥ 0.4 ms
  Sync Width: ≥ 0.045 ms

- Several items like size, position and distortion can be adjusted through OSD menu, and if you want to keep it, please push the key 1 for memory, or keep the key untouched for about 20 seconds, it is automatically memorized.

  NOTE : In case of RECALL, the key is untouched for about 30 seconds, RECALL function will be canselled.

  Please note, however, that there is the case you can not get the size and/or position you want,
  (for example, in case Display video Time is too short, you can't get bigger size of the image.)

- The CRT adopted in this CRT display is designed to minimize the moire phenomenon at suitable size for typical display modes. However, there might be a display format among many formats, in which the moire phenomenon appears on this display.

5.5 Signal level and input impedance

5.5.1 Video Signal level

This CRT display is adjusted at the factory using 0.7V p-p Video Signal, Black level is 0V.

5.5.2 Sync Signal level

- H/V Separate, H/V Mixed : TTL level
- Sync on Green : 0.3 V p-p

5.5.3 Input impedance

- Video input: 75 Ω
- Sync input: ≥ 1 kΩ

5.6 Display performance

5.6.1 Display area

1) PRESET TIMING

	(MODE 1 & 2)	(MODE 3)
WIDTH	: 300 mm ± 5 mm	286 mm ± 5 mm
HEIGHT	: 225 mm ± 5 mm	229 mm ± 5 mm

5.6.2 Centering

1) PRESET TIMING (MODE1~3)
   IA – BI ≤ 5 mm
   IC – DI ≤ 5 mm
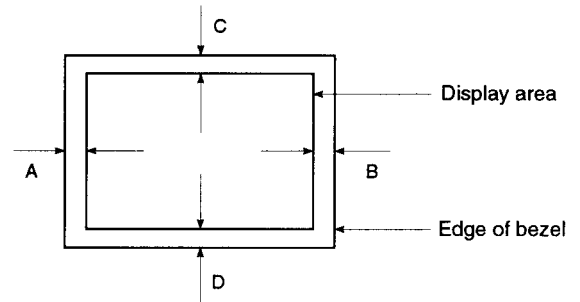
5.6.3 Distortion

1) Trapezoid

$$\left| \frac{AC - BD}{AC + BD} \right| \times 100 \leq 1\ \%$$

$$\left| \frac{AB - CD}{AB + CD} \right| \times 100 \leq 1\ \%$$
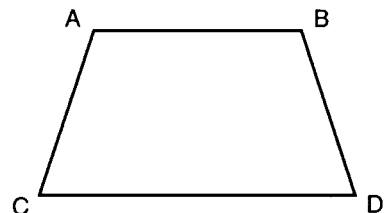
2) Parallelogram
   a, b ≤ 2 mm
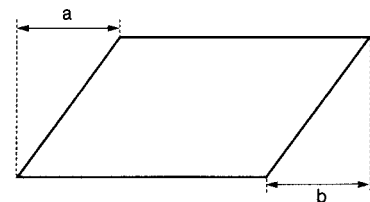
3) Pincushion and Barrel

$|C1|, |C2| \leq 2.5$ mm

$|d1|, |d2| \leq 2.5$ mm
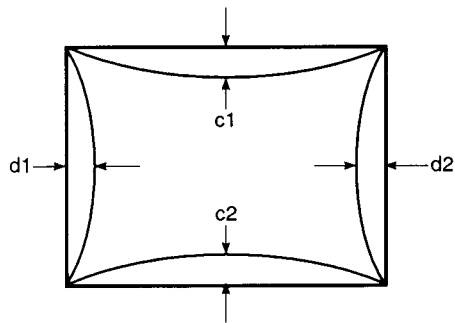
5.6.4 Rotation

$|H1 - H2| \leq 2.2$ mm
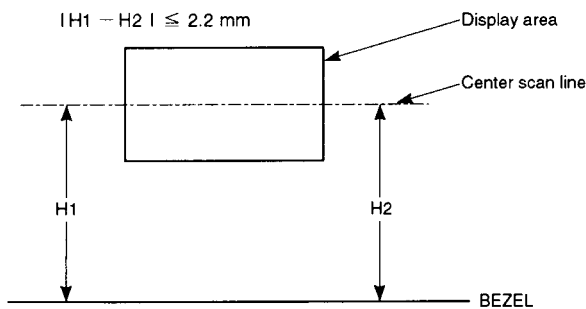
5.6.5 Linearity

Horizontal linearity

$$= \frac{X \max. - X \min.}{X \max. + X \min.} \times 100 \% \leq 6 \%$$

Vertical linearity
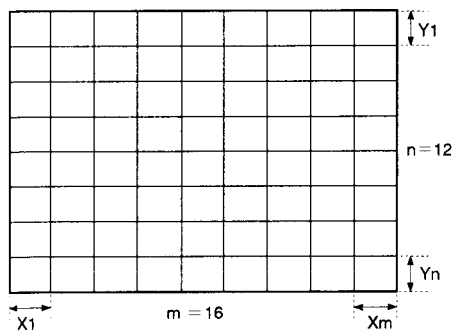
$$= \frac{Y \max. - Y \min.}{Y \max. + Y \min.} \times 100 \% \leq 5 \%$$

<Conditions>

Display image ------- crosshatch pattern

Maximum and minimum values should not be adjacent to each other.

X max. is maximum value among $X1 \sim Xm$
X min. is minimum value among $X1 \sim Xm$

Y max. is maximum value among $Y1 \sim Yn$
Y min. is minimum value among $Y1 \sim Yn$

5.7 General performance

5.7.1 Video output

Bandwidth	86 MHz (Typ.)

5.7.2 Maximum luminance

Value	120 cd/m² (Typ.) for 5% white field at the center of the display area. 110 cd/m² (Typ.) for 100% white field at the center of the display area. Specified by 9300 K + 27 MPCD
Conditions	Display image : White full flat field Luminance : Max. (Contrast : Max.) (Brightness :Detent point)

5.7.3 Minimum luminance

Value	≤ 26 cd/m² at the center of the display area. Specified by 9300 K + 27 MPCD
Conditions	Display image : White full flat field Luminance : Min. (Contrast : Min.) (Brightness : Detent point)

5.7.4 Brightness variation

Value	70 % (Min.) Variation = C/A X 100
Conditions	Display image : White full flat field Luminance : MAX (Contrast : MAX) (Brightness : Detent point) A ; Luminance at center position C ; Luminance at position of lowest brightness

5.7.5 Display area regulation

	Display area variation	Range of variation
Due to Luminance	within 1.5 % of display area	26~110 cd/m² (white flat field)
Due to Power Supply	within 1.5 % of display area	AC : 90-132 V or 180-264 V
Due to Temperature	within 2 % of display area	0 - 40° C (fh=30-65 kHz)

5.7.6 Color Point

< Conditions >
Display image : White flat field at the center of
the display area.
Luminance : Brightness Detent point.

Contrast	max	min
Value	9300 K + 27 MPCD x = 0.281 ± 0.020 y = 0.311 ± 0.020	9300 K + 27 MPCD x = 0.281 ± 0.020 y = 0.311 ± 0.020

5.7.7 Misconvergence

Center area of display	(A) : 0.3 mm (Max.)
Corner area of display	(B) : 0.4 mm (Max.)

<Conditions>
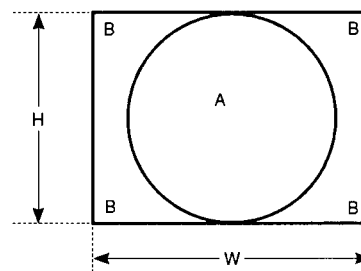
Display image	:	Crosshatch pattern mixed with R, G and B colors.
Convergence gauge	:	KLEIN CM7AG or equivalent.
Display area	:	W x H 300 x 225 mm

5.7.8 Purity

Conspicuous mislanding shall not be visible within display area at a distance of 60cm from CRT surface.

<Conditions>
Display image : White flat field
Luminance : Contrast max, Brightness Detent point.

5.7.9 Jitter
Invisible at a distance of 60 cm from CRT surface.

6. ENVIRONMENTS
6.1 Ambient temperature, humidity and altitude

	Operating	Storage and shipment
Temperature	0 ~ 40° C *¹ (fh = 30-65 kHz)	–20 ~ +60° C (–4 ~ 140° F)
Humidity	5 ~ 90 % *²	5 ~ 90 % *²
Altitude	3,000 m (Max.) (10,000 ft)	12,000 m (Max.) (40,000 ft)

*¹ 0 ~ 35° C for 66 ~ 69 kHz
*² Non-condensation

6.2 Vibration and shock
6.2.1 Vibration

	Order of tests	Direction of vibration		Acceleration		Frequency	Sweep	Test time
				Non-operation	Storage and shipment			
Unpacked	1	Vertical	Up to down	2.9 m/s² (0.3 G)		5 - 55 Hz	120 s	30 min.
	2	Horizontal	Front to back					15 min.
	3		Right to left					
Packed	1	Vertical	Up to down		10m/s² (1.0 G)	5 - 50 Hz	810 s Logsweep	40 min.
	2	Horizontal	Front to back		5 m/s² (0.5 G)			20 min.
	3		Right to left					

6.2.2 Shock (Drop test)

Unpacked	20 G One time for each face (6 faces) (non-operation)			
Packed	Order of drop	Face to drop is to face the floor. (See the figure)	Height	Number of drop
	1	a, b, c, d, e, g	40 cm	1 time for each
	2	f	55 cm	
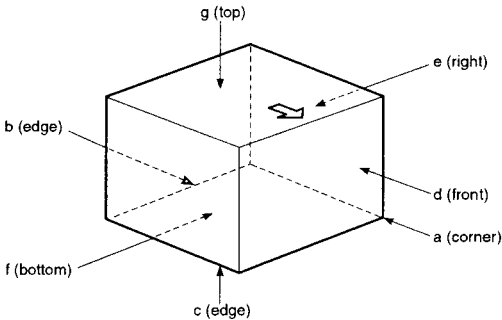
7. REGULATORY STANDARDS

7.1 Safety standards
Applicable standards
UL 1950, Listing
CSA 22.2 No. 950, Products Certification
TüV (IEC-950)/GS (ZH1)
DHHS, 21 CFR subchapter J, X-Ray Radiation
PTB, X-Ray Radiation, Approval
HWC
NORDIC
Energy Star

7.2 EMC standards
Designed to meet following standards
VCC I class II
FCC: FCC part 15, subpart B, class-B
VDE 0878/06.83
Vfg 243/1991
CISPR22 class B
MPR-II Radiation

<EMI test pattern>
White, full "H" characters (9 x 14 dots), block (12 x 24 dots) "H" character font is as follows:

8. POWER CORD
UL and CSA approved AC power cord is put in packaged. Length : 2.0 meter (6.56 feet) if you use in other country (for example Germany), please use a power cord approved by safety agency of each country (VDE in Germanu).

9. SIGNAL CABLE
Signal cable with Mini D-Sub 15P connectors at both end is put in package.

Length : 1.5 meter (4.93 feet)

10. COLOR CRT DEFECTIVE STANDARD

10.1 Specification of screen blemishes

This instruction is applied to inspection of the screen faults and of the glass quality of the faceplate.

10.2 Test procedure

10.2.1 Tests are to be done under the following two conditions:

(a) With a blanked white raster at 80 μ A.

(b) With incident light (white light of 700 - 1000 lux at the center of the screen; tube is not operated).

10.2.2 Viewing distance should be 60 cm minimum. Faults not visible at this viewing distance are permitted.

10.2.3 The Following quality areas are specified:

Zone A: Rectangular area (sides X and Y) of which the point of intersection of the diagonals coincides with the mechani-cal center of the screen.

Zone B: The remaining screen area except zone A.

Specifie zone is applied to glass faceplate defects.

10.2.4 Remarks concerning faults:

a) Unless otherwise specified, the size of a fault is the smallest value found with one of the two formulas:

$$\frac{a+b}{a} , \quad \frac{a}{20} + 2b \quad (a = \text{length}, b = \text{width})$$

b) For entirely or partially missing and/or non-fluorescent phosphor dots hold the following definitions:

Entire defect: Remaining part is not more than 50% of the complete dot.

Partical defect: Remaining part is between 50% and 75% of the complete dot.

10.3 Permissible limit

10.3.1 Screen faults

Missing phosphor dots, black spots, filled mask holes and copper stains

		Screen size	
		X	Y
Zone A		293 mm	219 mm

Size of defects				Max. permissible number	Min. permissible distance between defects	Max. permissible number in circle of ϕ 50 mm
Entire defects	A	A1	3 adjacent trios or more	0	—	—
		A2	3 adjacent same color dots or more	0		
		A3	More than 6 adjacent dots	0		
	B	B1	2 adjacent trio	0	—	—
		B2	4 or 5 adjacent dots	0		
		B3	2 adjacent same color dots	1		
	C	C1	1 trio	1	20 mm	—
		C2	2 adjacent different color dots	2		
		C3	1 dot	7		
			B + C	—	20 mm	—
Partial defects	D		Partial defects	—	—	5
Total pieces of defects excluding partial defects				7	—	—

— Entire defects having separation less than min. permissible distance are defined as an adjacent defects.

— Defects of remaining part more than 75% is ignored, except for concentration having diameter more than ϕ 8 mm.

10.3.2 Glass faceplate defects

(A) Air bubbles, open bubbles, stones and elongated air bubbles.

Area			Zone A	Zone B
Permissible major defects	Air Bubble. (average dia.)		0.51 — 0.70 mm	0.51 — 0.70 mm
	Spot and open air bubble (average dia.)		0.41 — 0.60 mm	0.41 — 0.60 mm
	Maximum Permissible number	Each zone	1	1
		Total	2	
	Minimum allowable distance among defects		57 mm	
Permissible defects within any 50 m-dia,-circle	Air Bubble. (average dia.)		0.25 — 0.50 mm	
	Spot and open air bubble (average dia.)		12.7 mm	
	Max. permissible number		2	
	Δ Minimum allowable distance among defects		0.20 — 0.40 mm	
ΔΔ Elongated air bubble (permissible size)		Width	0.10 — 0.20 mm	0.10 — 0.30 mm
		Length	4.0mm	6.0 mm

Δ   This is also applied to the distance to major defects.

ΔΔ This should be evaluated by its average diameter, and then relevant standards of air bubble are applied except number of defects for each zone, minimum distance among defects and maximum limit of average diameter.

(B) Scratches

Width (mm)	Maximum allowable length (mm)
< 0.05	permitted
0.05 - 0.10	25.4
0.11 - 0.15	12.7
> 0.15	rejected

(C) Other defects not stated above such as chips, cracks, bruises, shear marks, clouds and polished patterns are not allowed when they substantially spoil appearance, viewed from the viewing distance.

DIMENSIONS

410

ROTATION
180°

438

168

415

206

TILT
UP

13°

TILT
DOWN

4°

Ø260
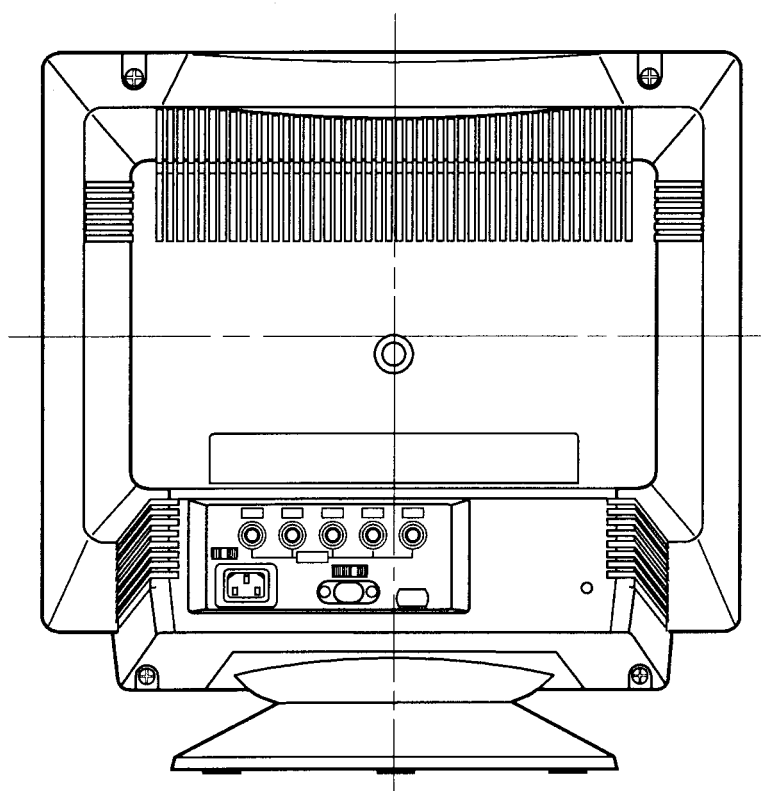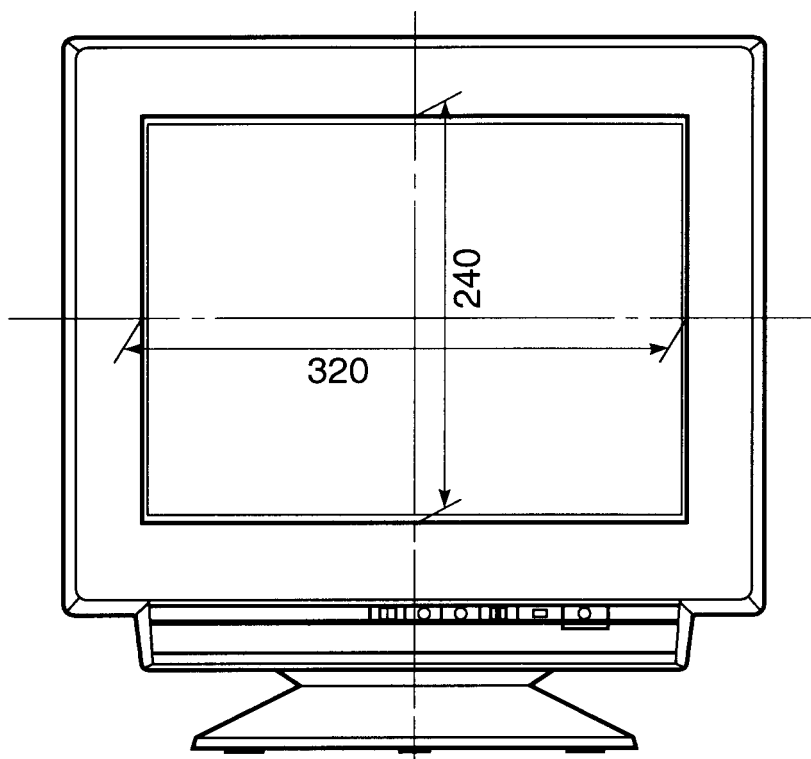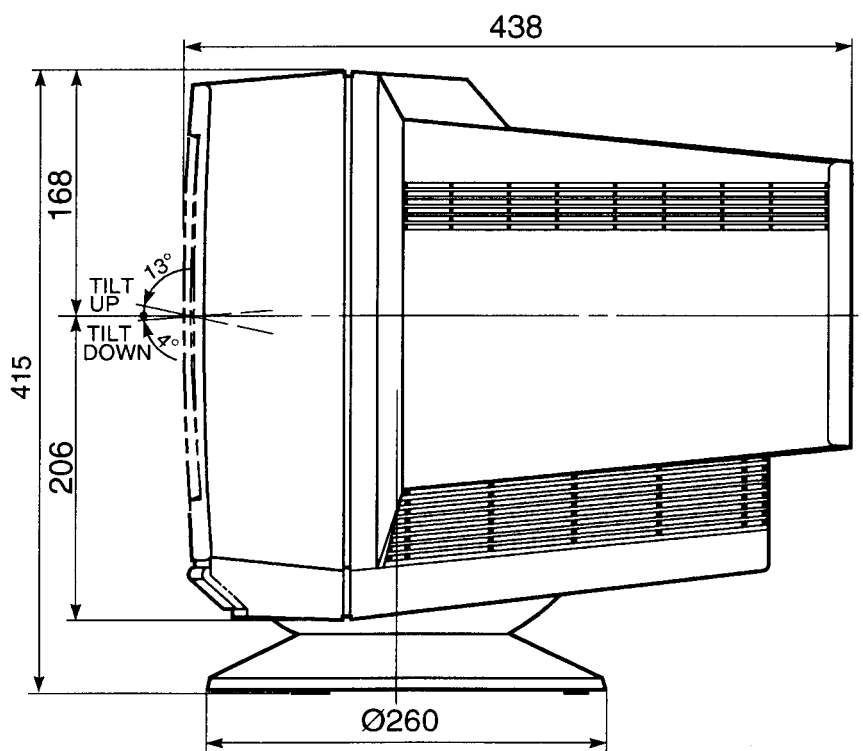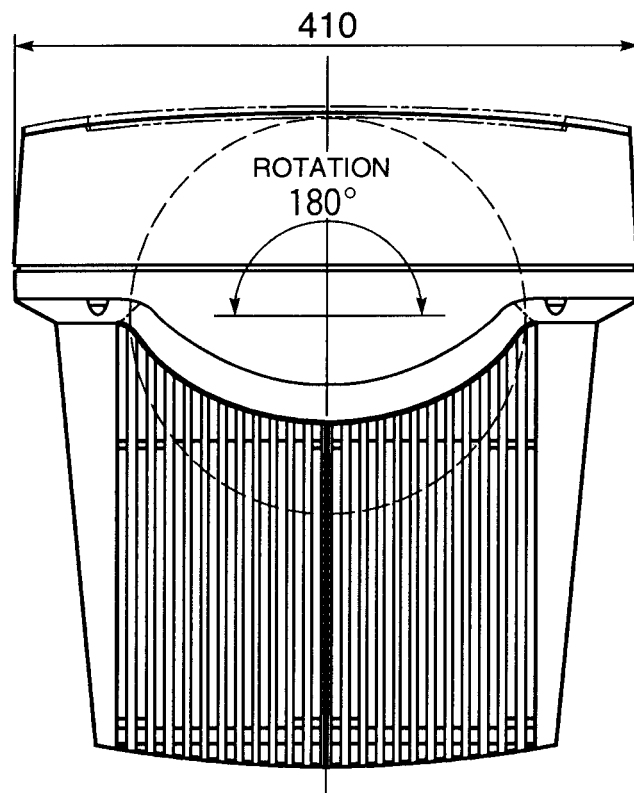
1. Rear cover removal

Note: Spread a mat underneath to avoid damaging the CRT surface.

1) Remove four large screws ① and small screw ② from the rear cover.
2) Remove the cover.
3) Remove eight screws ③ from the shield case.
4) Remove the shield case.
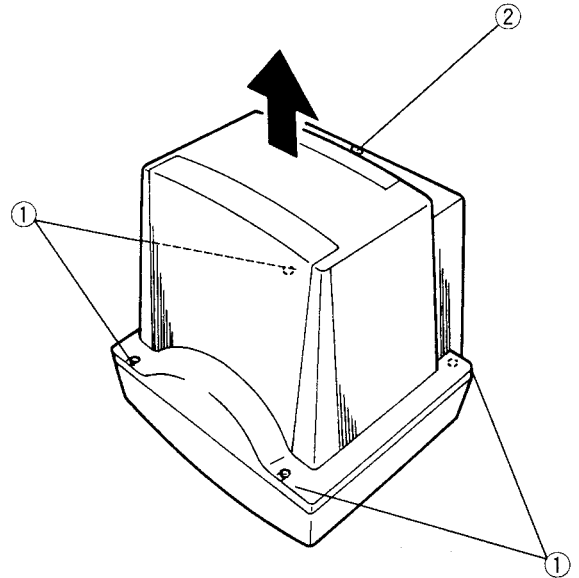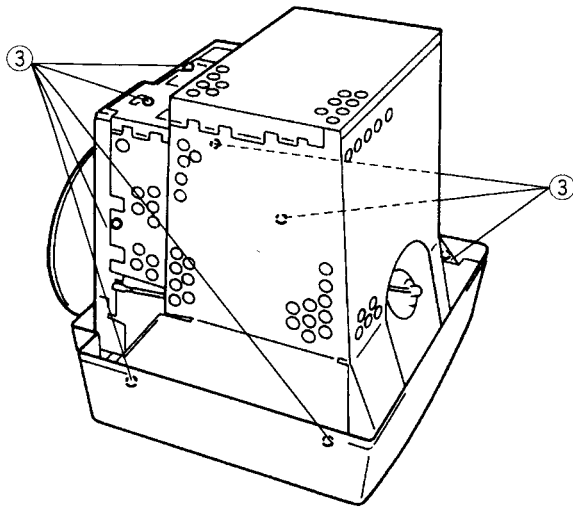
2. Video PCB removal

1) Remove four screws ④ securing the shield cover.
2) Desolder (B) and Remove the shield cover (A).

(A)

DESOLDER

(B)
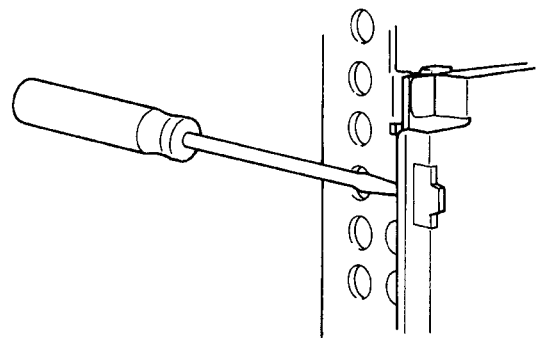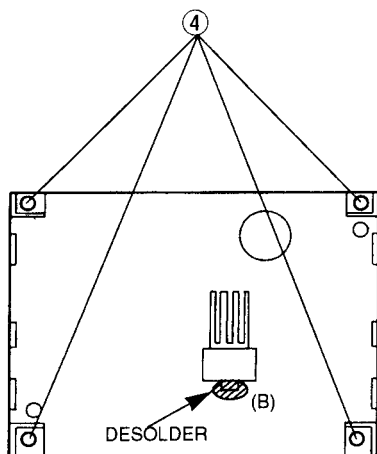
3) Loosen the screw ⑤ securing the CRT neck and the shield case.
4) Remove the PCB block from the CRT.
5) Desolder and remove the N382B connector ⑥.
6) Remove two focus leads ⑦ after pulling up the focus lead securing lever.
7) Remove ground connector ⑧ (N106) connected to the PCB.
8) Remove two flexible PCBs ⑩.
9) Remove N104B connector ⑨.
10) Remove the PCB from the shield case.
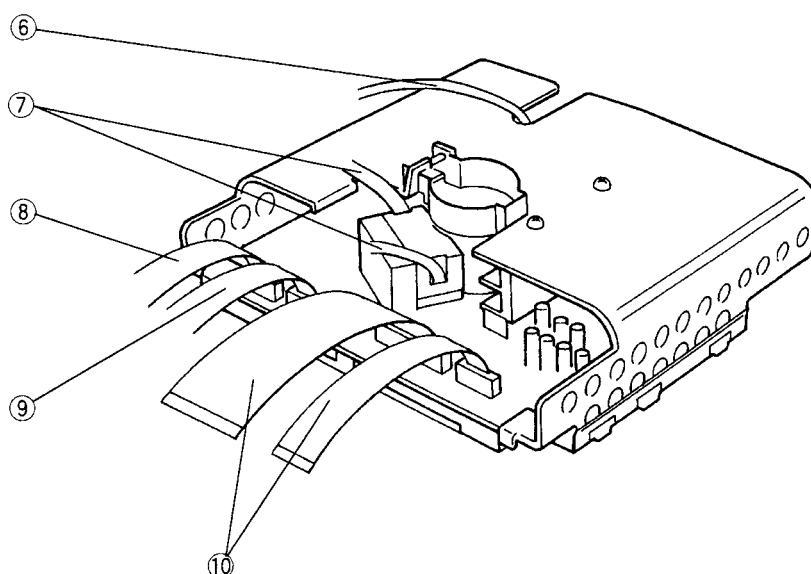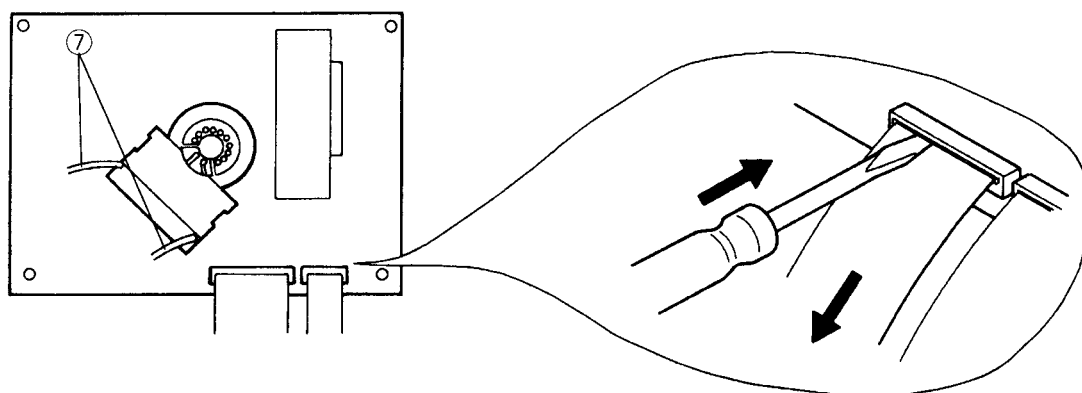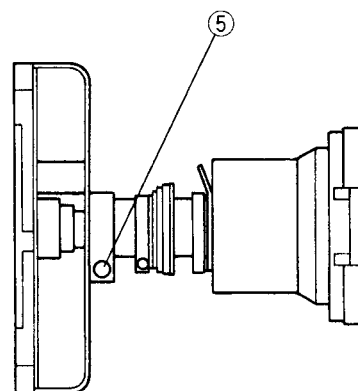
3. Main PCB Removal

1) Remove the connector ⑪ (N802) of the degauss coil.

2) Remove the DY connector ⑫.

3) Remove the anode cap.

4) Remove two ground connector ⑬.

5) Move the CRT face down and remove two screws ⑭ securing the bottom fitting metal.

6) Remove the fitting metal and the PCB from the cabinet.

7) Remove eight screws ⑮ securing the fitting metal and PCB.

8) Remove the PCB ⑯ with the figure referenced.
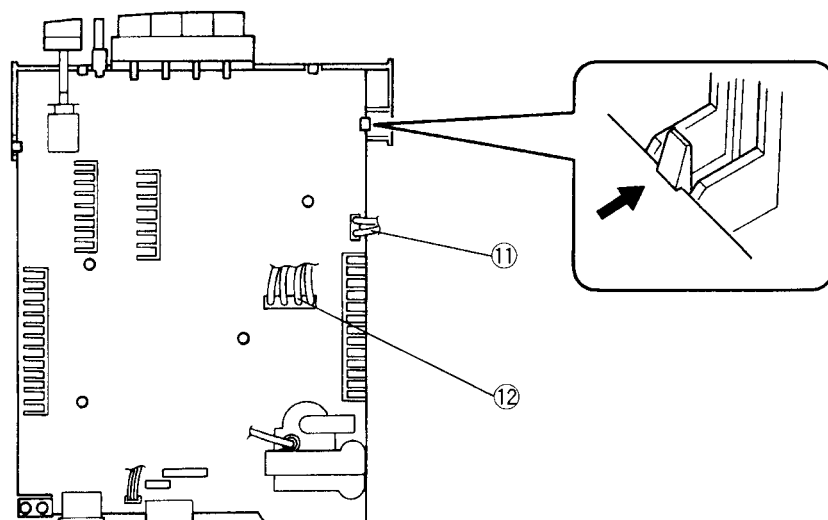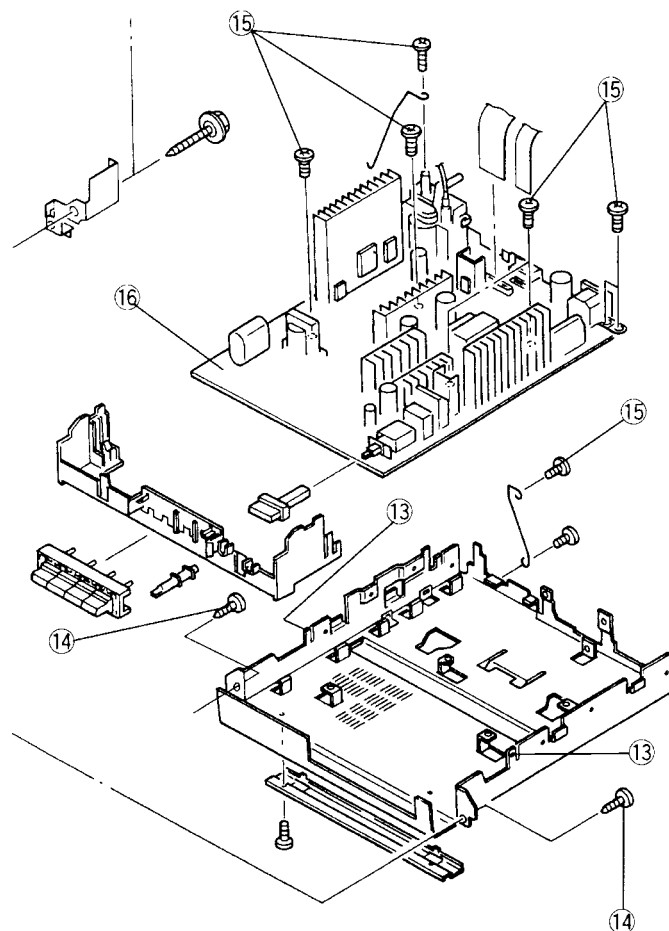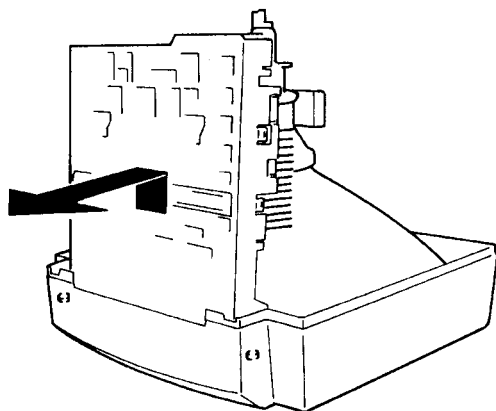
CONTROL LOCATION

Basic operation of parts

Control panel

| 1 | ◀ | ▶ | 2 | ▭ | ⏻ |

Names of control

| [1] key | ◀ key | ▶ key | [2] key | Pilot LED | Power switch |

Functions

(1) To display contrast menu; to adjust contrast.
(2) To adjust level of selected item.

Lights when power switch is pressed; goes out when it is pressed again. Operation / Display of the Power Saving Function.

To display main menu: quit menu. Store change data in the memory.

Selected or switch change data.

To switch on and off the display unit.
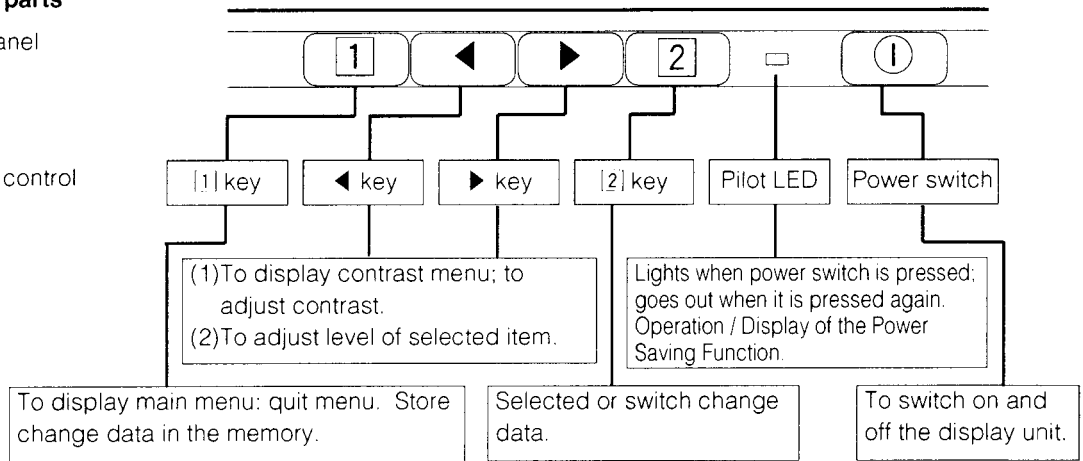
* For a detailed description of the functions of the [1] key, ◀ key, ▶ key, and [2] key, refer to the next section onward.

Examples of on-screen operation

A. Contrast adjustment

Display changes | Steps of operation | On-screen display changes
— < Contrast menu > —

1. Display the contrast adjustment menu using the ◀ key or ▶ key.

◐ **CONTRAST**

[1]
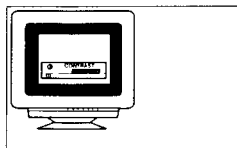
2. Set the desired state using the ◀ key or ▶ key. If the [1] key is pressed, the set data is stored in the memory and the menu screen is cleared.

B. H. size adjustment

Display changes | Steps of operation | On-screen display changes
— < Menu > —
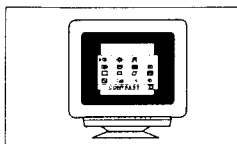
1. Call the main menu on the screen by pressing the [1] key.

CONTRAST [2]
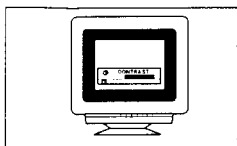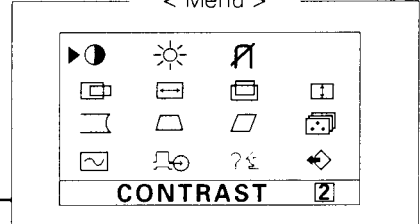
2. Move to cursor to H. SIZE using the ◀ key or ▶ key, then press the [2] key to select.

— < Sub menu > —

H. SIZE

80

EXIT : [1]   ▭/▭ : [2]

3. Set the desired state using the ◀ key or ▶ key. If the [1](EXIT) key is pressed, the set data is stored in the memory and the menu screen is cleared.

Main menu

CONTRAST [2]

CONTRAST	BRIGHTNESS	DEGAUSS	
H.POSITION	H.SIZE	V.POSITION	V.SIZE
V.PINCUSHION	TRAPEZOID	PARALLELOGRAM	COLOR
DISP.FREQ	VIDEO LEVEL	LANGUAGE	RECALL

CONTRAST [2]

– 18 –
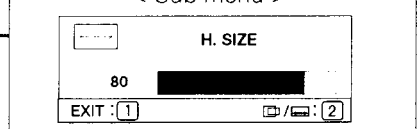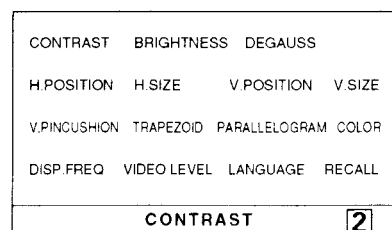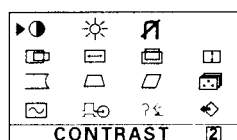
CAUTION FOR ADJUSTMENT AND REPAIR

1. Degaussing is inevitably required at purity adjustment or convergence adjustment.
2. If you check or adjust electrical specification or function, more than 20 minutes burn-in is required.
3. Reforming of the lead wire is required after your repair work.
4. Prior to starting work, be sure to check that the input signal is at the specified timing and that the polarity is as specified in all modes.
5. Brightness control: After mounting the rear cover, brightness tends to decrease about 5 cd/m² on a flat white field and about 1 cm/m² on a white raster field. This should be taken into consideration.

6. Brightness stabilizing time: It takes about 20 to 50 seconds for the brightness to stabilize after turning the power off for 5 seconds (AC). Therefore, care should be taken to this.
7. Aging should be made in white raster of 30 ~ 50 cd/m² and raster size, 320 x 240 mm before adjusting the ITC.
8. Set the CONTRAST to MAX and BRIGHTNESS to CENTER using the O.S.D.

CAUTION FOR SERVICING

When servicing or replacing the CRT, high voltage sometimes remains on the anode. So, completely discharge high voltage before servicing or replacing the CRT so as to prevent a shock to the service person.

CRT Anode Discharge

1. When you check the CRT anode or replace the CRT, discharge the CRT anode to the external conductive coating (aquadag) of CRT, especially when checked right after power turn-off.
2. Ground one end of a jumper wire which has a resistor (30 kV < resisting pressure 100 MΩ) and connect the other point to the CRT anode.

Note: Grounding must be done first.

This model has a section that does not share a common ground with the power supply section. The different sections are referred to as the HOT section and the COLD section in the precautions below.

1. Do not touch the HOT section and the COLD section at the same time. You may be hit by an electric shock.
2. Do not short the HOT section to the COLD section. This could blow the fuse or damage parts.
3. Never measure the HOT section and the COLD section at the same time when using tools such as oscilloscopes or multimeters.
4. Always unplug the unit before beginning any operation such as removing the chassis.
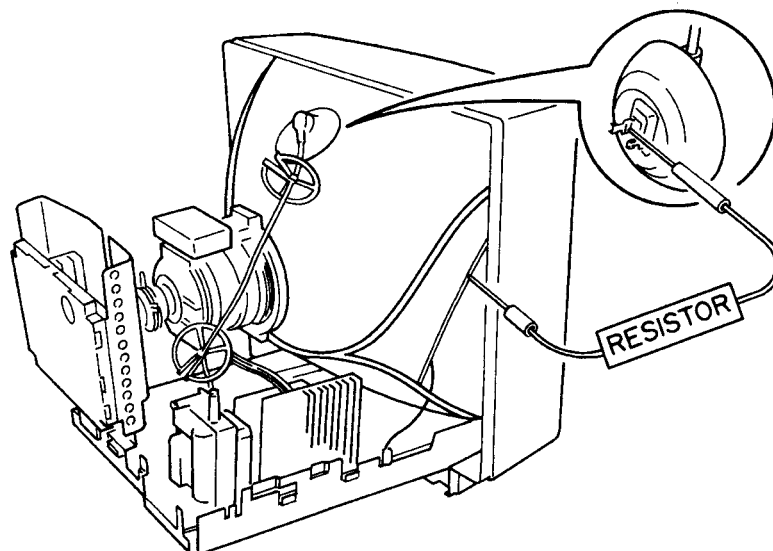
ADJUSTMENT AND CHECK PROCEDURE

INTRODUCTION

- This monitor is controlled by a microcomputer. With the exception of purity/convergence/focus all is digitally adjusted.
  Therefore a computer, the dedicated control software, the dedicated interface, a 9~12 V power supply, and a signal generator are required servicing.

TOOLS REQUIRED

- **Computer**
  The control software is IBM PC compatible only.
  Therefore, it is not compatible with any other operating systems. For further information please contact our sales office.

- **Control Software**
  The HV5 chassis can only use 'TXD1733 adjustment program disk'. No other program can access the EEPROM on the monitor. For further information please contact our sales office.

- **Interface**
  The interface is dedicated to work only with the control software and the HV chassis. There are no substitutes for this interface. For further information please contact our sales office.

- **Power Supply**
  A DC 9~12 V (+9~12 V/-9~12 V) power supply is required for operating the interface.

- **Signal Generator**
  It is necessary for you to use a signal generator which operates on fH 82 kHz, fv 160 Hz, and fc 135 MHz bands.

INTERFACE CONNECTION
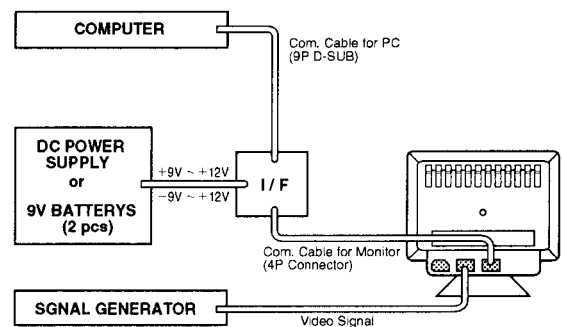
INTERFACE SCHEMATIC DIAGRAM

4P (MONITOR SIDE)
① GND	
② CLK	
③ SO	
④ SI	

9P D-SUB (PC SIDE)
⑤ GND	
⑥ DATA SET READY	
⑦ REQUEST TO SEND	
⑧ CLEAR TO SEND	
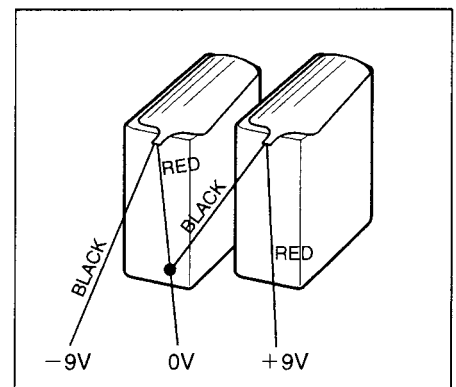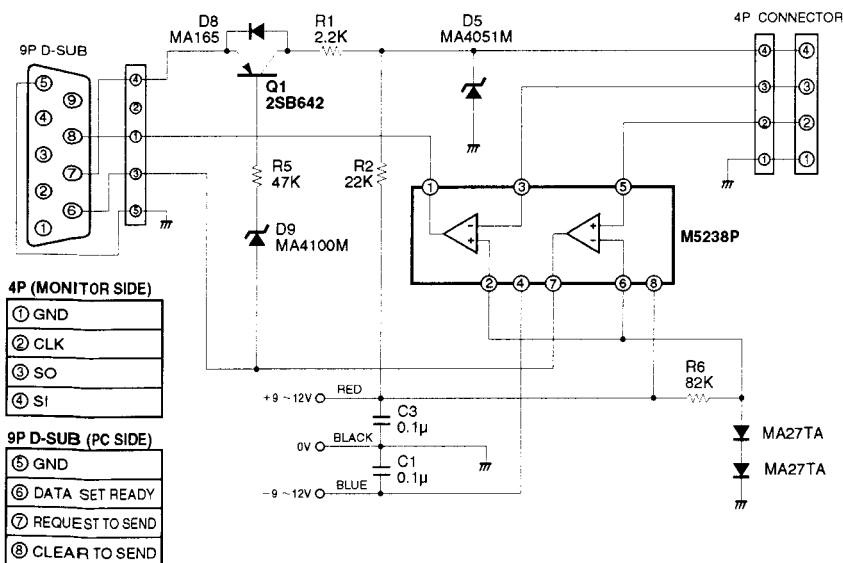
BATTERY CONNECTION

OTHER TOOLS

- Oscilloscope (dual trace)
- Scope probe – Attenuation: 100:1
                Attenuation: 10:1
- Digital Voltmeter – Range: 0 to 1000 V DC
                Accuracy: 0.1 %
- TV color Analyzer II – that reads luminance and chromaticity X and Y coordinates.
- Digital High Voltmeter
- AC power supply – Output voltage : 0 to 300 V
- Degaussing coil
- Convergence meter
- Scale
- Double-faced scale
- Microscope – Scale factor: 50
- White racquer (Paint)

STANDARD CONDITION OF ADJUSTMENT PROCEDURE

- Signal timing :   Standard timing 1024 x 768
                            (See page 5)
- Display pattern :   White, full "H" character
- Signal level :   V/H: TTL level video: 700 mV
- Input source :   AC 120 V, 60 Hz
- Ambient temperature :   Room temperature
- Warm-up time :   More than 30 minutes
- Brightness control :   Center
- Contrast control :   Max.
- Magnetic field :   Vertical: 40 µT
                            Horizontal: 0 µT
- Signal cable :   Attached

Video input signal from PC.

White level.. 700mV 16
(16th gray scale)   653mV 15
                                                      607mV 14
                                                      560mV 13
                                                      513mV 12
                                                      467mV 11
                                                      420mV 10
                                                      373mV   9
                                                      327mV   8
                                                      280mV   7
                                                      233mV   6
                                                      187mV   5
                                                      140mV   4
                                                       93mV   3
                                                       47mV   2
Black level___ 0mV   1
(1st gray scale)   Note : Setup level is 0V.

                                                              700mV
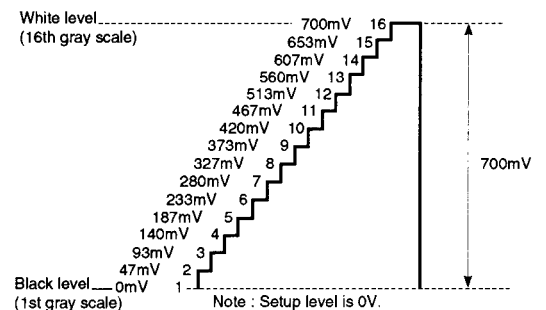
- Use a Helmholtz device to adjust an unit with no horizontal magnetic field and a vertical field of 40 µT. Inspect the unit under the same conditions.
- The ambient illuminance must be 200 lux.
- Use an external degaussing coil any time the DEGAUSS switch does not remove color shading.
- To check the image width, height, linearity and distortion, proceed as below.
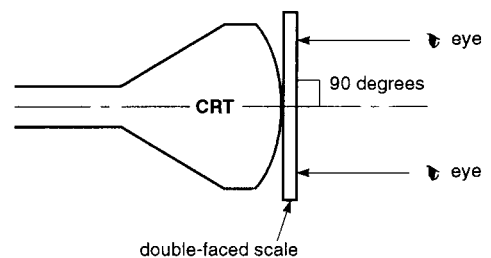
Measure level with respect to tube axis.

ADJUSTMENT SOFTWARE

1. Software operating procedure

A) Power on the computer.

B) Connect the Communication cable for monitor adjustment.

C) Insert the adjustment disk into the drive.

D) At the A:> prompt type "VSR" , then press [ENTER].

> A function to identify the connected monitor is provided to prevent accidents due to erroneous use of the HV5 chassis program. If this program is used for any monitor other than the HV5, the message reading 'This monitor is not an HV5 chassis. All further activity has been prevented' is displayed and the operation is stopped.

E) Refer to the adjustment procedures.

2. Adjustment Program

Main Menu of Adjustment Program

```
<<HV5 ADJUST PROGRAM MAIN MENU>>  (e: exit)          <Ver *.*>
 1)  Load data from FILE          6)  Clear User preset
 2)  Adjust H. OSC freerun        7)  Save data to FILE
 3)  Adjust VSR setting           8)  Special ADJUST
 4)  Adjust OTHER setting         9)  Information Service
 5)  Adjust Factory preset       10)  Show Version & Error
```

Description of Function of Each Menu

1) **Load Data from File**
   This transfers the data file from the disk to the EEPROM on the monitor.

2) **Adjust H. OSC Freerun**
   To guarantee that the full range of horizontal frequencies operate correctly. The reference oscillation frequency should be set.

3) **Adjust VSR Setting**
   To guarantee that the full range of horizontal frequencies operate correctly. The reference voltage and the distortion offset data should be set.

4) **Adjust Other Setting**
   This is used to control the brightness and color.

5) **Adjust Factory Preset**
   Makes adjustments to the factory presets. This data is also referenced when in modes other than tha preset mode.

6) **Clear User Preset**
   Clear the data written in the user preset domain. There is no data in the user presets when the product shipped from the factory.

7) **Save Data to File**
   Transfers the data from the EEPROM on the monitor to a data file on a fkoppy disk or hard drive. The data file can be named anything as long as it is less than 8 characters long.

8) **Special Asjust**
   This menu has the following functions
   ① Related data is automatically set on the basis of adjustment results to save the time for adjustment.
   (Example: Color adjustment applies only to the 9300 K, while 6550 K and user color data are automatically set.)
   ② To prevent operation errors in changes of various type of control flags, these flags are automatically returned to the default settings (Final Tune).

9) **Information Service**
   Displays the H/V frequencies that is being supplied to the monitor and gives the operational status of the monitor.

10) **Show Version and Error**
   Shows the version of the microprocessor that is in the monitor. Also, if there is an erroe in the operation of the monitor.
   The error is displayed on the screen of the PC.

SERVICE ADJUSTMENT CONTROL LOCATION

CRT
SOCKET

N7B (7) GREEN VIDEO

N7B

VIDEO P.C.B.

SOLDER SIDE

LED

SW 901

SW 902

SW 903

SW 904

AC SW

15V (for DATA SETTING)

D844

R842

T801

MAIN P.C.B.

COMPORNENT SIDE

TP 1

TP 2

N802

TP 3

VR801 (+B)

FUSE (250V 3.15A)

R854

TP for +B Adjust

TP 5

AC IN

C844

SIGNAL IN

COM. PORT

FBT

VR584 (H. CENTER)

S-FOCUS VR

D-FOCUS VR

SCREEN VR
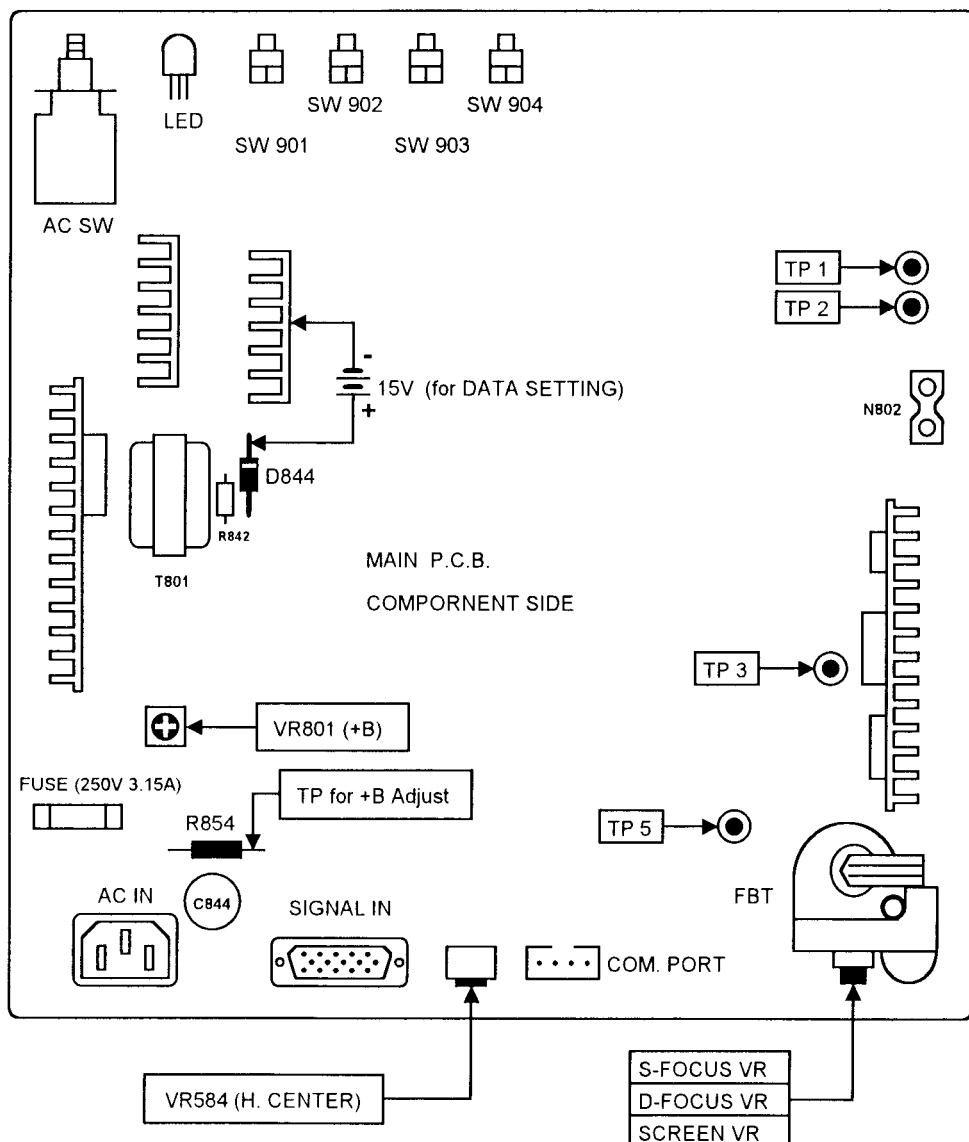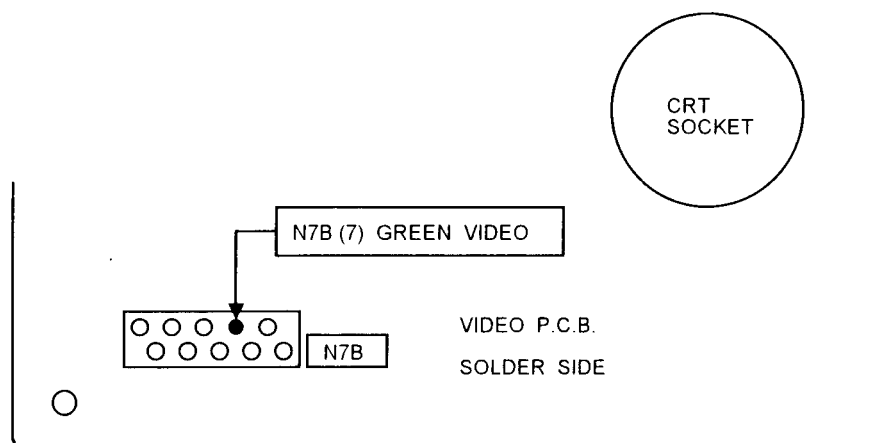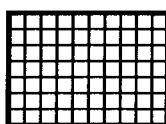
REQUIRED ADJUSTMENT PROCEDURE AFTER A PARTS IS REPLACED (✓ IS REQUIRED)

REPLACED PARTS

ADJUSTMENT ITEM	MAIN P.C.B.	VIDEO P.C.B.	CRT DY FBT	IC1301 IC1302 IC1303 IC351	Q1001 Q1004 Q1005 Q1101 Q1104 Q1105 Q1201 Q1204 Q1205	IC820 PC830 Q801 Q802 Q803	IC501	IC504	IC401 IC490 IC601 Q494 Q495 Q574	IC550	IC660 Q680	Q584 Q585 L681	Q550	IC901	IC902
A DATA SETTING *	✓														✓
B +B ADJUST	✓					✓									
C H. FREE RUN	✓						✓								✓
D H. DRIVE DUTY	✓						✓	✓							✓
E H. DRIVE +B	✓						✓			✓					✓
F EHT	✓		✓								✓		✓		✓
G H. CENTER	✓		✓									✓			✓
H H.V. SIZE / POSI V.PCC (1)	✓		✓				✓		✓				✓		✓
I H.V. SIZE / POSI V.PCC (2)	✓		✓				✓		✓				✓		✓
J BRIGHTNESS, COLOR	✓	✓	✓	✓	✓										
K FOCUS	✓	✓	✓	✓	✓										
L FINAL TUNE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
M DATA SAVING	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PURITY & CONVERGENCE			✓												
SCREEN CHECK	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

* (A) DATA SETTING : Do not load standard data except when main P.C.B. and IC902(EEPROM) are replaced.

1. Description of Adjustment Method

ITEM Program Menu	◇ Test Meter ▼ Test Point □ Pattern	JOB CODE	Input Signal	Operation	Adjusting Value
A **STANDARD DATA SETTING** 1) Load data from FILE	▼ D844 - GND Refer to service adjustment control location on page 23	A1 A2 A3 A4 AE		Do not connect the power and signal cable to monitor. Apply 15V to D844 CATHODE and GND. (Do not apply 5V to IC901. Because IC876 supply 5V and RESET signal to IC901) Set the cell to the menu at left and press ⏎. A massage **FILE –> EEPROM FILE NAME (q or Q escape) [ ] :** is displayed. So key in the DACDATA.DAT (when using the standard data) and press ⏎. Disconnect 15V cable, then turn on the power switch of the monitor.	
			Do not load standard data except when Main P.C.B. and EEPROM are replaced.		
B **+B ADJUST**	◇ Digital voltmeter ▼ R854 Refer to service adjustment control location on page 23	B1 B2	Mode-2	Check that the input signal to the monitor is [fH 60.0KHz] and [fV 75.0Hz] and press ⏎. Make the adjustment to the value shown at right by turning the VR801 on the main PCB.	98V +2 / -1V
C **H. FREE RUN** 2) Adjust H. OSC freerun	□ Crosshatch	C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 CE	 HV5-1 HV5-2 HV5-3 HV5-4	Set the cell to the menu at left and press ⏎. Set the cell to the adjusting mode <u>INTP [0]</u> and press ⏎. Check that the input signal to the monitor is [fH 29.5KHz] and [fV 48.0Hz] and press ⏎. When the screen image has stabilized, press ⏎ to return to menu of C2. Input signal [fH 39.0KHz] and [fV 77.1Hz] Select Adjusting mode <u>INTP [1]</u>, and repeat above procedure. Input signal [fH 54.0KHz] and [fV 105.0Hz] Select Adjusting mode <u>INTP [2]</u>, and repeat above procedure. Input signal [fH 70.0KHz] and [fV 165.0Hz] Select Adjusting mode <u>INTP [3]</u>, and repeat above procedure. Press ⏎ to return to main menu.	

Note 1 : Check to be sure that the program disk name is **TXD1733** before making necessary adjustment.
Note 2 : Unless otherwise specified, the monitor state is as given at right.
Note 3 : The underlined places indicate the adjustment items on the screen of the PC.

	ITEM Program Menu	◇ Test Meter ▼ Test Point ☐ Pattern	JOB CODE	Input Signal	Operation	Adjusting Value
K	FOCUS	☐ Character	K1 K2 K3 K4	MODE-2	Check that the input signal to the monitor is [fH 60.0KHz] and [fV 75.0Hz]. Make the corner sections of the screen optimum by turning D-FOCUS VR on the FBT. Make the center section optimum by turning S-FOCUS VR on the FBT. Repeat K2 and K3 to make it optimum.	

L	FINAL TUNE
	  8) Special ADJUST
			L1
			L2
			
			L3
			
			L4
			L5
			L6
			
			L7
			
			L8
			L9
			
			L10
			LE
					Set the cell to the menu at left and press ⏎.
					Select the 9:FINAL TUNE from the menu.
					(Step 1):Data tuning.
					    This messages will appear :
					    <loading EEPROM data> ...end
					    <tuning EEPROM data> ... end
					    <saving data to EEPROM> ... end
					    <RECALL data - PRESET data> wait a
					                                                      moment
					(Step 2):Erase user preset data.
					    Erase All ' user preset data OK ? >
					    Press Y ⏎, go to L6.
					(Step 3):Calcalate color data.
					    COLOR 6550K data OK ? >, press Y ⏎.
					    USER COLOR data OK ? >, press Y ⏎.
					    ABL data OK ? >, press Y ⏎.
					    finished . (Hit return key)
					    Press ⏎, go to L8.
					(Step 4):Set brightness data and flag.
					    BRIGHT click data OK ? >, press Y ⏎.
					    BRIGHT min./max. limiter automatically
					    OK ? >, press Y ⏎.
					    end
					    <SET FLAG>
					    wait a moment ... end
					    tune end .
					    Hit return key !
					    Press ⏎, return to menu of L2.
					Press E ⏎, to return to the main menu.	

M	DATA SAVING 7) Save data to file		M1 M2		Set the cell to the menu at left and press ⏎. Key in the file name after [ ] :. Use serial number as a file name (EXAMPLE : FF5110001 = "F5110001.DAT")	

ITEM Program Menu	◇ Test Meter ▼ Test Point □ Pattern	JOB CODE	Input Signal	Operation	Adjusting Value
F **EHT ADJUST** 3) Adjust VSR setting 8) Special ADJUST	◇ Digital voltmeter ▼ TP5 ~ GND □ RGB off (Sync only)	F1 F2 F3 F4 F5 F6 F7 F8 FE	HV5-4	Set the cell to the menu at left and press ⏎. Set the cell to the adjusting mode INTP[3] and press ⏎. Check that the input signal to the monitor is [fH 70.0KHz] and [fV 165.0Hz] and press ⏎. Move the cell to EHT and press ⏎. Make adjustment to the value shown at right by using ← and →. Register by pressing ⏎ and return to the main menu by pressing E. Set the cell to the menu at left and press ⏎. Select the 5: EHT DATA CALCULATION from the menu. 　The computer will then display : 　**Calculate EHT data automatically · OK ?** Press Y to return to menu of F8, press E to return to the main menu. (When selected above menu calculation is done 　automatically for HV5-1, HV5-2 and HV5-3　)	146.0V ±1V
G **H. CENTER**	□ RGB off (Sync only)	G1 G2 G3	Mode-8	Set the Brightness to MAX. Check that the input signal to the monitor is [fH 57.9KHz] and [fV 71.8Hz]. Make the adjustment as shown at right by turning the VR854 on the main PCB.	A　　A=B　　B Back raster Set the raster to the center with respect to the bezel.

ITEM Program Menu	◇ Test Meter ▼ Test Point □ Pattern	JOB CODE	Input Signal	Operation	Adjusting Value
H/V. SIZE, POSI and V. PCC (1) 5) Adjust Factory preset	□ Crosshatch	H1		Set the cell to the menu at left and press ⏎.	
		H2	Mode-1	Check that the input signal to the monitor is [fH 31.5KHz] and [fV 60.0Hz] and press ⏎.	
		H3		Set the cell to following items, press ⏎ and make the adjustment to the value shown at right by using ⬅ and ➡. ① H. SIZE ② H. POSI ③ V. SIZE ④ V. POSI ⑤ V. PCC ⑥ PARALLELOGRAM ⑦ TRAPEZOID	H : 300mm ±5 V : 225mm ±5 H/V Posi : Center V. PCC : Best point
		H4		After adjusting the above, return to menu of H2 by using Ⓔ and Ⓨ.	
		H5	Mode-2	Input signal [fH 60.0KHz] and [fV 75.0Hz], and repeat above procedure.	H : 300mm ±5 V : 225mm ±5
		H6		After adjustment, go to H7 by using Ⓔ and Ⓨ.	
		H7	Mode-3	Input signal [fH 63.7KHz] and [fV 60.0Hz], and repeat above procedure.	H : 286mm ±5 V : 229mm ±5
		HE		After adjustment, return to the main menu by using Ⓔ and Ⓝ.	
H/V. SIZE, POSI and V. PCC (2) 3) Adjust VSR Setting	□ Crosshatch	I1		Set the cell to the menu at left and press ⏎.	
		I2		Set the cell to the adjusting mode INTP [0] and press ⏎.	
		I3	HV5-1	Check that the input signal to the monitor is [fH 29.5KHz] and [fV 48.0Hz] and press ⏎.	
		I4		Set the cell to following items, press ⏎ and make the adjustment to the value shown at right by using ⬅ and ➡. ① H. SIZE ② H. POSI ③ V. SIZE ④ V. POSI ⑤ V. PCC ⑥ V. LIN (S)	H : 300mm ±5 V : 225mm ±5 H/V Posi : Center V. PCC : V. LIN : Best point
		I5		After adjusting the above, return to menu of I2 by using Ⓔ.	
		I6	HV5-2	Input signal [fH 39.0KHz] and [fV 77.1Hz]	
		I7		Select Adjusting mode INTP [1], and repeat above procedure.	
		I8	HV5-3	Input signal [fH 54.0KHz] and [fV 105.0Hz]	
		I9		Select Adjusting mode INTP [2], and repeat above procedure.	
		I10	HV5-4	Input signal [fH 70.0KHz] and [fV 165.0Hz]	
		I11		Select Adjusting mode INTP [3], and repeat above procedure.	
		IE		After adjustment, return to the main menu by press Ⓔ.	

ITEM Program Menu	◇ Test Meter ▼ Test Point ☐ Pattern	JOB CODE	Input Signal	Operation	Adjusting Value
CRT CUT-OFF 4) Adjust OTHER setting	◇ TV Color Analyzer II ☐ RGB Off (Sync only) ☐ 16 gradation grayscale	J1 J2 J3 J4~ J11 J12 J13	Mode-2	Set the Contrast to MAX, Brightness to Center and Color is 9300k using the OSD. Check that the input signal to the monitor is [fH 60.0KHz], [fV 75.0Hz] and turn off the RGB signal. Set the cell to the menu at left and press ⏎. Make the adjustment R,G and B Low Light by using ⬅, ➡ and Screen VR to CRT cut-off. **Please refer to flow chart for this adjustment on page 30.** Change to the pattern at left. Adjust the screen VR so the 2nd level of gray appears slightly.	
BRIGHTNESS COLOR ADJUST	☐ White window (5cm×5cm at center)	J14 J15 J16 J17		Change to the pattern at left. Move the cell to the following items and make the adjustment to the value shown at right by using ⬅ and ➡. 　R. SUB CONT 9300K 　G. SUB CONT 9300K 　B. SUB CONT 9300K Set Contrast to MIN using the OSD. Move the cell to the following items and make the adjustment to the value shown at right by using ⬅ and ➡. 　R. LOW LIGHT 9300K 　G. LOW LIGHT 9300K 　B. LOW LIGHT 9300K **Adjust two colors only out of above three as shown in ⟮J11⟯ on page 30.**	$Y=120$ cd/m^2 $x=0.281 \pm 0.15$ $y=0.311 \pm 0.15$ $x=0.281 \pm 0.15$ $y=0.311 \pm 0.15$
ABL **1.0V ADJUST** 8) Special ADJUST	☐ White flat field (full window) ☐ White window (5cm×5cm at center) 1.0V p-p video*	J18 J19 J20 J21 J22 J23 J24 J25 J26 JE		Change to the pattern at left. Move the cell to ABL 9300K and make the adjustment to the value shown at right by using ⬅ and ➡. Press Ⓔ to return to main menu. Change to the pattern at left.* Set the cell to the menu at left and press ⏎. Select the 1:VIDEO 1.0Vpp ADJUST from the menu. Set Input Video Level 1.0V using the OSD of the monitor. Make the adjustment to the value shown at right by using ⬅ and ➡. Press ⏎ to return to menu of J19, press Ⓔ to return to the main menu.	$Y=110$ cd/m^2 $Y=120$ cd/m^2

Should make Final Tune after this adjustment refer to item L on page 31.

CRT CUT-OFF ADJUSTMENT

Signal : Turn off the R,G,B (sync signal only)

J4 — Data set : Change data value to "FF" for R,G,B Low Light 9300K Program Menu : 4) Adjust OTHER setting

J5 — Set screen VR fully counterclockwise (Min).
J6 — Turn screen VR until the raster appears with any one of three (R,G,B) colors

---

If Red appears in J6

J7 — Set
- R. Low Light 9300K - Value to "00"

J8 — Turn screen VR until the raster appears with any one of two (G or B) colors.

If Green appears in J8

J9 — Set
- G. Low Light 9300K - Value to "00"

J10 — Adjust Screen VR to "0.46 cd/m²" for Blue raster

J11 — Adjust
- R. Low Light 9300K -
- G. Low Light 9300K -
to [x=0.281 y=0.311]

If Blue appears in J8

J9 — Set
- B. Low Light 9300K - Value to "00"

J10 — Adjust Screen VR to "3.65 cd/m²" for Green raster

J11 — Adjust
- R. Low Light 9300K -
- B. Low Light 9300K -
to [x=0.281 y=0.311]

If Green appears in J6

J7 — Set
- G. Low Light 9300K - Value to "00"

J8 — Turn screen VR until the raster appears with any one of two (R or B) colors.

If Red appears in J8

J9 — Set
- R. Low Light 9300K - Value to "00"

J10 — Adjust Screen VR to "0.46 cd/m²" for Blue raster

J11 — Adjust
- R. Low Light 9300K -
- G. Low Light 9300K -
to [x=0.281 y=0.311]

If Blue appears in J8

J9 — Set
- B. Low Light 9300K - Value to "00"

J10 — Adjust Screen VR to "0.89 cd/m²" for Red raster

J11 — Adjust
- G. Low Light 9300K -
- B. Low Light 9300K -
to [x=0.281 y=0.311]

If Blue appears in J6

J7 — Set
- B. Low Light 9300K - Value to "00"

J8 — Turn screen VR until the raster appears with any one of two (R or G) colors.

If Red appears in J8

J9 — Set
- R. Low Light 9300K - Value to "00"

J10 — Adjust Screen VR to "3.65 cd/m²" for Green raster

J11 — Adjust
- R. Low Light 9300K -
- B. Low Light 9300K -
to [x=0.281 y=0.311]

If Green appears in J8

J9 — Set
- G. Low Light 9300K - Value to "00"

J10 — Adjust Screen VR to "0.89 cd/m²" for Red raster

J11 — Adjust
- G. Low Light 9300K -
- B. Low Light 9300K -
to [x=0.281 y=0.311]

J12 — Adjust screen VR so the 2nd level of gray appears slightly.

(Test pattern : 16 gradation grayscale)

ITEM / Program Menu	◇ Test Meter ▼ Test Point ☐ Pattern	JOB CODE	Input Signal	Operation	Adjusting Value
K **FOCUS**	☐ Character	K1	MODE-2	Check that the input signal to the monitor is [fH 60.0KHz] and [fV 75.0Hz].	
		K2		Make the corner sections of the screen optimum by turning D-FOCUS VR on the FBT.	
		K3		Make the the center section optimum by turning S-FOCUS VR on the FBT.	
		K4		Repeat K2 and K3 to make it optimum.	
L **FINAL TUNE** 8) Special ADJUST		L1 L2		Set the cell to the menu at left and press ⏎. Select the 9:FINAL TUNE from the menu. (Step 1):Data tuning. This messages will appear : **<loading EEPROM data> ...end** **<tuning EEPROM data> ... end** **<saving data to EEPROM> ... end** **<RECALL data - PRESET data> wait a moment** (Step 2):Erase user preset data. **Erase All ' user preset data OK ? >** Press Ⓨ ⏎, go to L6. (Step 3):Calcalate color data. **COLOR 6550K data OK ? >**, press Ⓨ ⏎. **USER COLOR data OK ? >**, press Ⓨ ⏎. **ABL data OK ? >**, press Ⓨ ⏎. **finished . (Hit return key)** Press ⏎, go to L8. (Step 4):Set brightness data and flag. **BRIGHT click data OK ? >**, press Ⓨ ⏎. **BRIGHT min./max. limiter automatically OK ? >**, press Ⓨ ⏎. **end** **<SET FLAG>** **wait a moment ... end** **tune end .** **Hit return key !** Press ⏎, return to menu of L2. Press Ⓔ ⏎, to return to the main menu.	
		L3			
		L4 L5 L6			
		L7			
		L8 L9			
		L10 LE			
M **DATA SAVING** 7) Save data to file		M1 M2		Set the cell to the menu at left and press ⏎. Key in the file name after [ ] :. Use serial number as a file name (EXAMPLE : FF5110001 = "F5110001.DAT")	

2. Purity adjustment

The CRT is an ITC assembly, however, here is the explanation for readjustment just in case.

If color shading is apparent, make the following adjustment.

2.1.

(1) Verify that no unusual magnetic fields are near the Display unit (magnetic screwdrivers, table magnets, etc.). If possible, use a wooden workbench for this procedure.

(2) Degauss the magnetism of chassis and CRT with external degaussing coil.

(3) Adjust the purity magnet until each of the red, green and blue channels is free of color shading.

Make the following adjustment if color shading cannot be corrected by the above, or if the CRT or deflection yoke has been replaced.

2.2.

(1) Keep the convergence yoke and deflection yoke in the positions shown below.
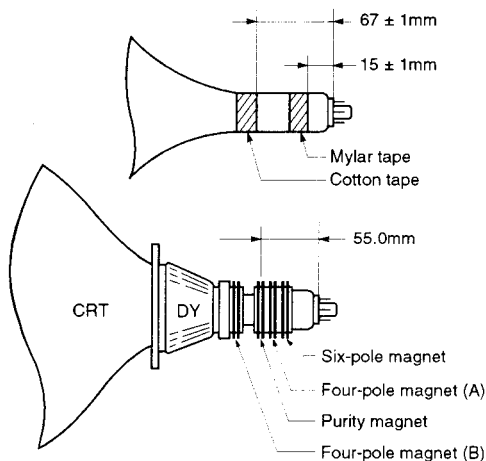
CY tightening torque: 8^{+2}_{-1} kgf·cm
DY tightening torque: 18 ± 2 kgf·cm

(2) Make sure that this adjustment is done later than 30 minutes after power on.

(3) Degauss the magnetism of chassis and CRT with an external degaussing coil.

(4) Verify that static convergence is roughly matched. If it is misaligned, adjust static convergence of Red color and Blue color with Four-pole magnet A.
For this adjustment Four-pole magnet B which is with deflection yoke must be put together.

(5) Remove the wedge from the deflection yoke, and pull the deflection yoke fully to the front.

(6) Display green color solely with the signal generator. Adjust the purity magnet so that the center of the screen displays a pure green disk. Slide the deflection yoke rearward until the four corners shaded and check its area's uniformity.
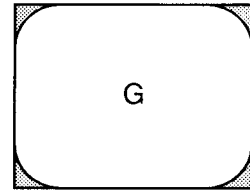
(7) After the adjustment of step 5, readjust the static convergence if some gap was found.
Static convergence alignment for this step is to be performed with Four-pole magnet A and Six-pole magnet.

(8) Display red disk. Adjust the purity magnets so as that red disk is as the center of the screen simultaneously. If red is shifted, move its position in the opposite direction.
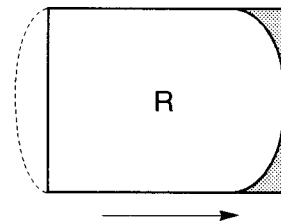
(9) Display Green again.
Slide the deflection yoke rearward until the screen appears green on the whole, and fasten it there.

(10) Confirm purity in each direction by rotating the set to direction of East, West, South, and North after degauss by external degaussing coil.

(11) If magnetism remains even after the adjustment, use the compensation magnet to obtain purity.

The final confirmation method for purity

In the natural magnetic field, rotate the monitor in the direction of East, West, South and North.

Earth's magnetic field may cause magnetism on the monitor. Confirm that the automatic degaussing circuit built in the monitor can erase the amount of magnetism which was introduced with above rotation.

3. Convergence adjustment

The CRT is an ITC assembly, however, here is the explanation for readjustment just in case.

(1) Make sure that this adjustment is done later than 30 minutes after power on. Check general ability coarse adjustment and purity adjustment finished.

(2) Degauss the magnetism of chassis and CRT with degaussing coil. (CRT board also)

(3) Apply mixed crosshatch signals of red and blue from the signal generator. Nudge the deflection yoke to equal its inclination up and down, right and left with a temporary wedge between CRT and the top of the yoke.

(4) Match the red and blue images at the center of the screen by rotating the Four-pole magnet A (See STEP-1 in figure for examples). For this adjustment Four-pole magnet A should be put together.

(5) Apply mixed crosshatch signal of red, blue and green from the signal generator.

(6) Match the red, green and blue images at the center of the screen by rotating the Six-pole magnet. (See STEP-2 in figure for examples)

(7) If lines are twisted either lefthand or righthand (See the STEP-3 in figure for examples) perform the following:

    a. Use Four-pole magnet B to shift convergence of horizontal lines by 5 to 6 mm at the center of the screen. (For twisted lefthand lines, shift blue line downward and red line upward. For twisted righthand lines, shift red line downward and blue line upward. Do not shift convergence of vertical lines.)

    b. Then realign convergence with Four-pole magnet A.

(8) Loosen the deflection yoke fastening screw and gently nudge the yoke up and down to achieve the best overall convergence on the edges of the screen (See STEP-4 in figure for examples).
Insert wedge at the top of the deflection yoke so that the convergence will not deviate due to an unsteady deflection yoke.

(9) Gently nudge the yoke from side to side to achieve the best overall convergence on the edges of the screen (See STEP-5 in figure for examples).
Insert wedges at the left side and right side of the deflection yoke so that the convergence will not deviate due to an unsteady deflection yoke. (Do not apply silicon adhesive to the wedges to prevent them from slipping out).

(10) Check that the image is horizontal.
If needed, rotate the deflection yoke.

(11) Recheck the purity adjustment. If purity was adversely affected repeat the purity adjustment, then recheck convergence when finished.

(12) Retighten the deflection yoke fastening screw. Do not overtighten the screw, as this can damage the CRT.
    Tightening torque: 18 ±2 kgf·cm

(13) Align the horizontal line convergence at the center of the screen with the Differential coil (See STEP-6 in figure for examples).

(14) Align the horizontal line convergence at the corner and of the screen with the Differential resistor VR-YV. (See STEP-7 in figure for examples).

(15) Align the center vertical line convergence at the corner of the screen with the Vertical Isotropic Astigmatism resistor VR-YH (See STEP-8 in figure for examples).

(16) Recheck convergence at the center of the screen. If needed, realign with the Four-pole magnet A and the Six-pole magnet.

(17) Insert wedges as shown in STEP-9 of figure (at the top, bottom, and right side of the deflection yoke). Secure them with silicon adhesive and polyester tape. Remove any temporary wedges while keeping convergence aligned.

(18) If the convergence on the fringe areas in still not acceptable, place one or more Permalloys around the funnel to achieve the best effect. Then press these Permalloys onto the funnel. Verify convergence around all edges of the screen. (See STEP-10 in figure for examples).

NOTE

In the above step, do not place the Permalloys closer than 20 mm from the HV anode cap. Do not tape them over any paper labels or secure them with silicon adhesive.

(21) After completion of adjustment, apply locking paint to the movable portions of the deflection and convergence yokes to secure them.

(22) Make adjustment so that the value of white window pattern from the signal generator is below that under the condition of 100 cd/m² brightness at the standard condition.
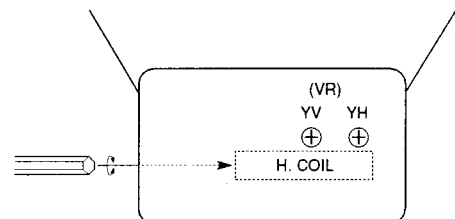
Adjustment part	Misconvergence pattern / Wedge inserting position

Left column:

STEP-1

Four-pole magnet A

| R B | B R |
(misconvergence pattern diagrams)

STEP-2

Six-pole magnet

R & B G | G R & B
(misconvergence pattern diagrams)

STEP-3

Four-pole magnet B

Beams are twisted lefthand | Beams are twisted righthand

for example (lefthand)

with four-pole magnet B | with four-pole magnet A

STEP-4

Deflection yoke

Tilting the yoke up | Tilting the yoke down

Wedge

Deflection yoke

Rear view of the CRT

Right column:

STEP-5

Deflection yoke

Tilting the yoke left | Tilting the yoke right

Wedge

Rear view of the CRT

STEP-6

Differential coil

STEP-7

Differential resistor VR-YV

STEP-8

Differential resistor VR-YH

STEP-9

Tape   Wedge

Silicon adhesive

90°   45°   45°   90°   90°

Wedge spacing and how to tape

STEP-10

Permalloy

- 35 -

CHECK ITEM

These items are intended for a recheck after adjustment and for a check of the following function operations:

1. Resolution check
2. Brightness variation check
3. Gradation check
4. Brightness check
5. Deflection linearity check
6. Distortion check
7. Image stability check
8. Blinking image check
9. Circuit operation check
10. Specific function check
11. Power save function check

1. Resolution Check

(1) Apply resolution check pattern.
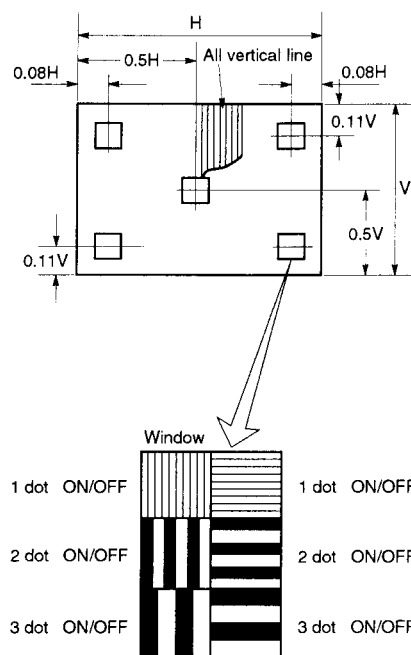
(2) Check with the normal signal and inverted signal. Check to be sure that display color between dots is uniform and that there are no color difference and spotty display color.
(3) Check the entire image quality including resolution.

2. Brightness Variation Check

(1) Cause the white full dot pattern to be displayed with the standard condition.
(2) Set the contrast to a maximum.
    Set the brightness to the center.
(3) Make sure that a brightness difference between the center and periphery is <70 % with the horizontal magnetic field in the condition of $\pm 30 \, \mu T$.

3. Gradation Check

(1) Cause the 16 grayscale to be displayed with the standard condition. (White gradation waves.)
(2) Set the contrast to a maximum and the brightness to the center.
(3) At this time, the 1st gradation (black level) cannot be seen and the 2nd gradation must be barely lit.
(4) With the brightness set to the center, vary the contrast from the maximum point the gradation tracking must be good at that time.

Note: If tint (particularly the gray, which is a middle color) is different, make adjustment of the white balance once again.

(5) With the contrast set to a maximum, vary the brightness from the maximum point to the minimum point and check to be sure that the brightness of the low gradation portion changes.

Note: Check both the color select 9300K and 6550K.

4. Brightness Check

(1) Cause the white full-flat field pattern to be displayed with the standard condition.

(2) Make sure that the brightness value is < 26 cd/m² when the contrast is set to a minimum and the brightness to the center.

5. Rotation Check

$\mid H1 - H2 \mid \leq 2.2$ mm

Display area

Center scan line

H1

H2

BEZEL
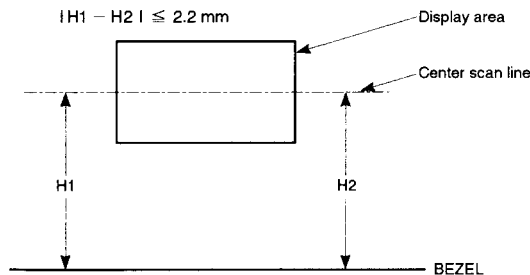
6. Linearity Check

$$\text{Horizontal linearity} = \frac{X\,max. - X\,min.}{X\,max. + Y\,min.} \times 100\% \leq 7\%$$

$$\text{Vertical linearity} = \frac{Ymax. - Ymin.}{Ymax. + Ymin.} \times 100\% \leq 6\%$$
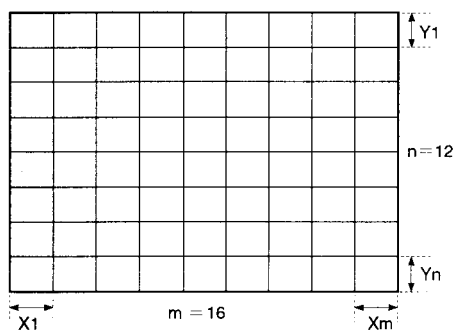
Y1

n = 12

Yn

X1   m = 16   Xm

<Conditions>
Display image ---- crosshatch pattern
Maximum and minimum values should not be adjacent to each other.
X max. is maximum value among X1 ~ Xm.
X min. is minimum value among X1 ~ Xm.

Y max. is maximum value among Y1 ~ Yn.
Y min. is minimum value among Y1 ~ Yn.

7. Distortion Check

(1) Apply the signal of the following mode and supply the green crosshatch pattern.
Mode-1
Mode-2
Mode-3

(2) Make sure that each value comes within the value indicated above.

• Distortion TRAPEZOID

$$\frac{AC - BD}{AC + BD} \times 100 \leq 1.0\ \%$$

$$\frac{AB - CD}{AB + CD} \times 100 \leq 1.0\ \%$$

A   B

C   D

• Pincushion and barrel
$\mid C1 \mid, \mid C2 \mid\ \leq 2.5$ mm
$\mid d1 \mid, \mid d2 \mid\ \leq 2.5$ mm

c1

d1   d2

c2
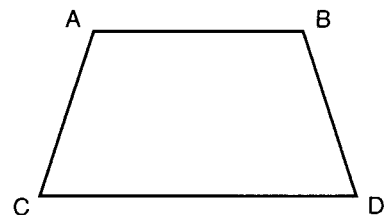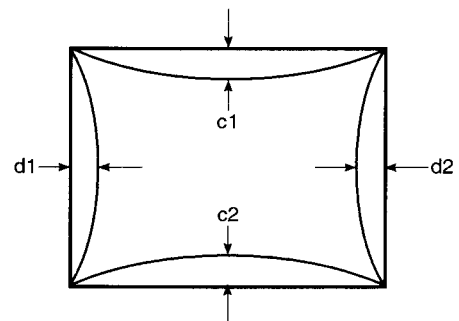
8. Image Stability Check

(1) Check to be sure that the size variations are <1.5 % when the white full dot pattern of standard condition and the AC voltage is changed to 90 ~ 264 V.

(2) Make sure that the size variations are <1.5 % when contrast is changed to a minimum from maximum at 26 ~ 110 cd/m².

9. Blinking Image Check

(1) Apply blinking pattern signal. (100%)

$$\Delta H \leq 2.0 \%(MAX)$$
$$\Delta V \leq 2.0 \%(MAX)$$
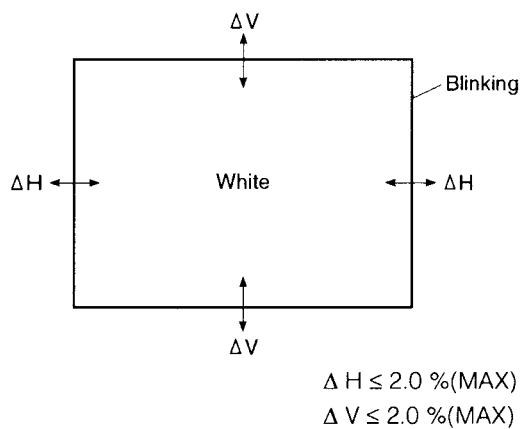
(2) Check the image stability at standard condition. Check if image changes due to blinking meets the standards above using the microscope.

10. Circuit Operation Check

(1) Check the protection operation at fH not covered in the specifications.

(2) Apply fH = 28 KHz and 71KHz signal and check to be sure that sync flows.

11. Specific Function Check

(1) Create the crosshatch pattern using the standard condition signal of the preset timing.

(2) Vary the vertical and the horizontal sizes and check to be sure that the horizontal size and horizontal position variations meet the values given below.

Vertical size	→ +/– 20 mm or more
Vertical position	→ up and down 5 mm or more
Horizontal size	→ MIN. < 280 mm MAX. > full scan
Horizontal position	→ left 40 mm or more
Horizontal position	→ right 40 mm or more

12. Power Save Function Check

The power consumption must meet the specifications when the horizontal/vertical sync signals are changed as shown below.

H. SYNC	OFF	ON	OFF
V. SYNC	ON	OFF	OFF
SPEC	< 30W	< 30W	< 8W

● It must be noted that this monitors is designed to be applicable to DDC1 communication the following points are different from ordinary monitors.
1. Use the signal cable, the which is furnished as an accessory (applicable to DDC1) only.
2. When replacing a PCB on which ROM for DDC1 is mounted, data writing is required.
Proprietary interfacing and software is required for reading or writing the data, please contact 1-800-PANASYS for further information.
In addition to the above, a computer applicable to WINDOWS and a 5V power supply unit are required.

● DDC1 Data Read/write System
1. Communication jig
(1) The composition of Communication jig
① Interface PCB.　　② Adapter cable (D-SUB 25P → 9P)　　③ 15P D-SUB cable

(2) Connection diagram for communication jig.
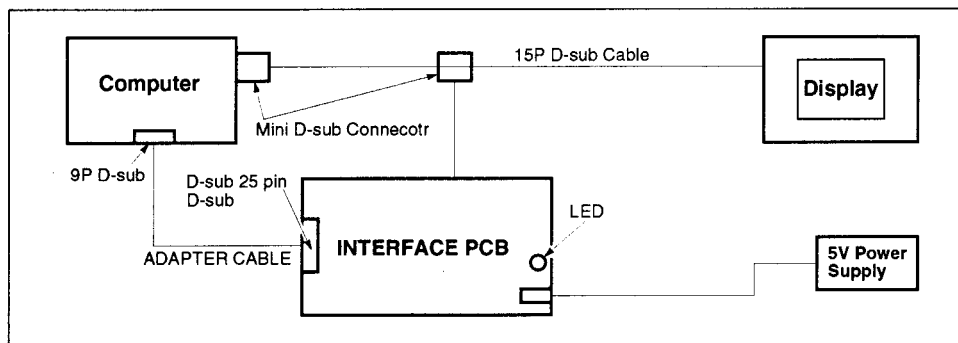
(3) Procedure to turn on the power:
① Make connections as shown above.
② Turn on the computer.
③ Turn on the power supply of communication jig.
④ Turn on the power supply of the MONITOR.
(Note) If the above-mentioned operation is normal, LED of the communication jig turns
green after step (4).
If this LED is red, repeat the steps (3) and (4).
(4) Confirmation of DDC mode
LED is mounted on the communication jig. According to its color, the DDC mode can be discriminated.
- When LED is green.　　DDC1 mode.
- When LED is orange.　　DDC2B mode.
- When LED is red.　　Transmission error.
- When LED is not lit.　　Obsolete.

2. Preliminary arrangements for using DDC data read/write software
(1) Copy DDC WRITE. EXE from floppy disk to hard disk drive (Name: \PanaTool Directory).
(2) Register DDC data read/write software (DDCWRITE.EXE) in the Icon.
① Click the menu bar "Icon" of the program manager.
② Select "register and group create" from the pull down menu.
③ Select "group create."
④ Name the group PanaTool and register the group.
⑤ Repeat (1) and (2) again and select "Icon registration."
⑥ Enter "DDC1/2B" for [Title] and "Hard disk drive name: \PanaTool\DDCWRITE. EXE"
for [Command line]. Then select [OK]
3. How to use DDC data read/write software.
(1) Start of DDC data read/write software.
Double-click the "DDC1/2B" Icon in the PanaTool group.
(2) Meaning of a button displayed.
The tool bar indicates the nine icons shown below.

These icons are explained, from left to right :

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨
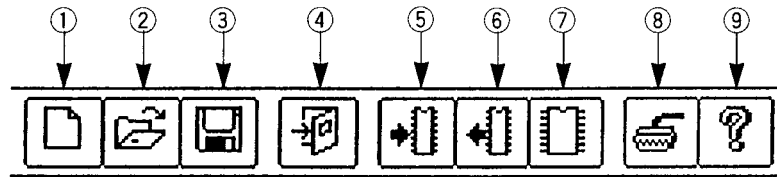
Icon ① :   Initialization of screen display contents.
Icon ② :   File is opened and displayed on the screen.
Icon ③ :   Data are stored in a file.
Icon ④ :   Finish the DDC data read/write software.
Icon ⑤ :   Data displayed on the screen are written in EEPROM.
Icon ⑥ :   Contents of EEPROM are displayed on the screen.
Icon ⑦ :   Contents of EEPROM are compared with the data displayed on the screen.
Icon ⑧ :   Communication port setting.
            Contents of setting : PORT → Using Communication port No.
            Baud rate → 9600,   Data → 8 bits,   Parity → Nil,   Stop → 1 bits
Icon ⑨ :   Version information display.

(3) Using the tool bar explained in (2) above, write data in EEPROM and make operations of reading, etc.
     A pop-up window may be displayed on the way. In such a case, select a proper one according to the
     message.

     (Example 1) EEPROM data are displayed on the screen.
        ① Click the loon (6th from the left) in the tool bar, with the arrow pointing from the memory chip.
        ② Decided whether reading is started in DDC1 mode or DDC2B mode.
        ③ Select START.

     (Example 2) Data displayed on the screen are written in EEPROM.
        ① Click the icon (5th from the left) in the tool bar, with the arrow pointing toward in the memory chip.
        ② Select START.

SCHEMATIC DIAGRAM FOR INTERFACE
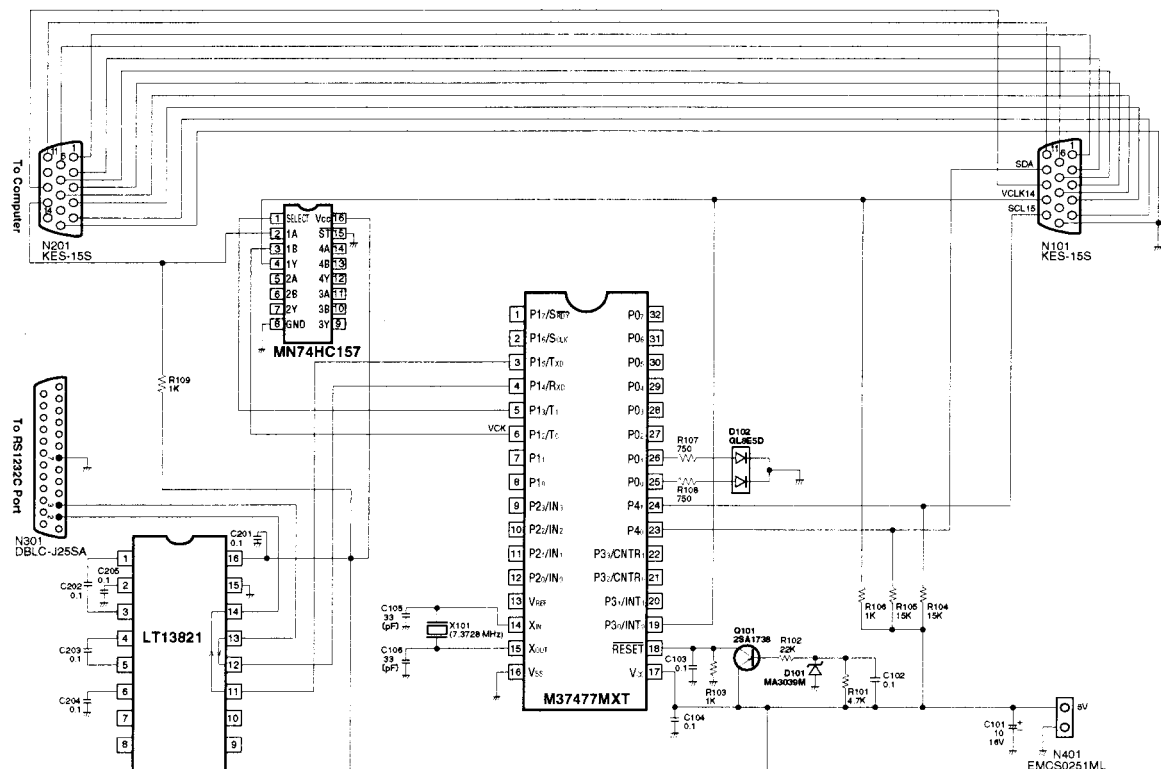
● **Data Management**

If the main PCB has been replaced, the data of the replaced PCB must be rewritten. The data rewriting procedures are as follows:

(1) Connect the communication cable for DDC to the defective PCB (15P D-SUB) and PC (9P D-SUB).
(2) Start the DDC control program.
(3) Connect the 5-V power line to IC280 (8) and GND to IC280 (4) of the defective PCB respectively.
(4) Click on ICON (6) in the window to save the data from the monitor.
(5) Click on ICON (3) to enter file names and save them on thew disk.
(6) Disconnect the 5-V power line and D-SUB connector from the defective PCB.
(7) Switch on the monitor whose main PCB has been replaced and connect the D-SUB connector back.
(8) Click on ICON (2) to enter the same file names as in step (4).
(9) Click on ICON (5) to load the data into the monitor.
(10) Click on ICON (6) and confirm that the data has been rewritten.

Connection Diagram
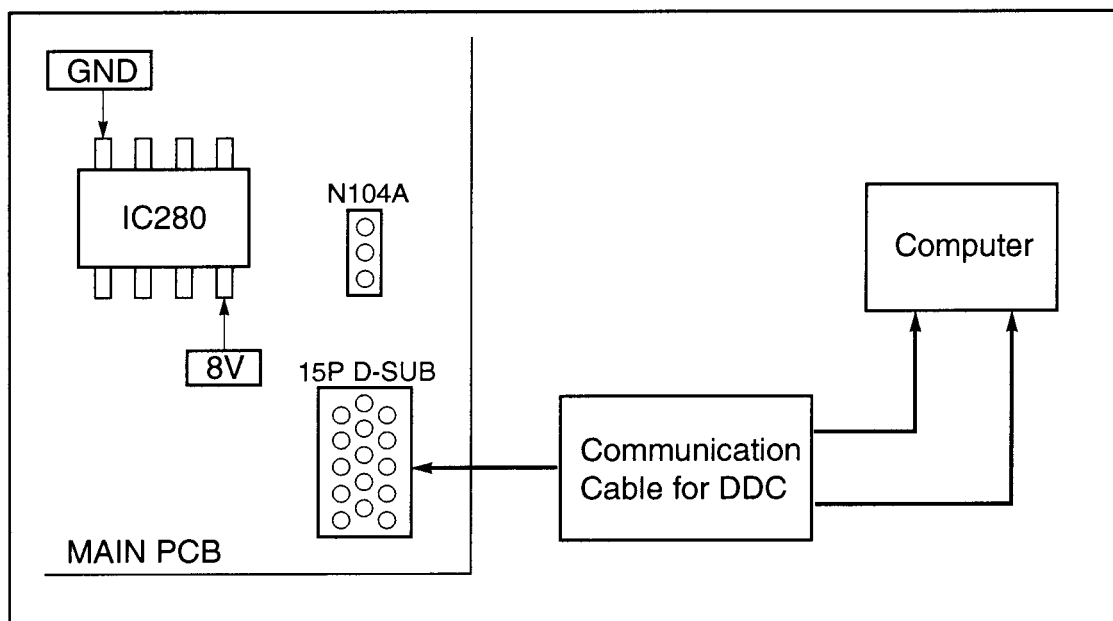
ICON
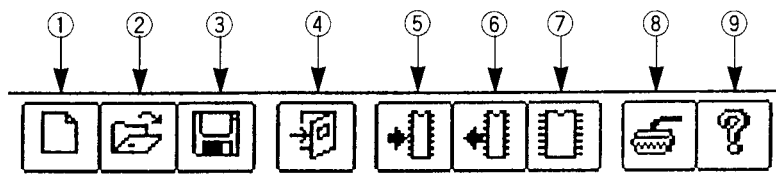
SHEET (2) / SYNC SEPARATE / O.S.D. GENERTOR

LD_DAC_1 (4) — (3) LD_DAC_1
DI (4) — (3) DI
CLK (4) — (3) CLK

(3) OSD_SW
(3) OSD_R
(3) OSD_G
(3) OSD_B
(3) OSD_FB
(3) FBKG
(3) 5V

R - O.S.D. CONTROL Q1002, D1008
G - O.S.D. CONTROL Q1102, D1108
B - O.S.D. CONTROL Q1202, D1208
ANALOG SWITCH CONTROL Q1303

OSD-R 15
OSD-G 14
OSD-B 13
12

O.S.D. PATTERN GENERATOR IC1305

8
7
6
5
10

LD_OSD (4)
H_PULES (7)
V_PULES (6)

Q1302
Q1301

5V REG. D207, R219
12V REG. IC1304

9
4

(3) R
(3) G
(3) B

R (D-SUB)
G (D-SUB)
B (D-SUB)
HS_CS (D-SUB)
VS (D-SUB)

15V

SYNC SEPARATOR
MODE DETECTOR
CLAMP PULSE GENERATOR
IC201

16
6 HS/CS (IN)
8 VS (IN)
4 G
18
19

10
13
15
17

SS CONTROL Q250, Q251
Q252

(4,6) $\overline{VS}$
(4,6) $\overline{HS}$
(3) CLAMP

MODE_HS (4)
MODE_VS (4)

SHEET (3) / VIDEO OUT

SHEET (4) / MICRO CONTROLLER / DIGITAL ANALOG CONVERTER

SHEET (5) / POWER SUPPLY
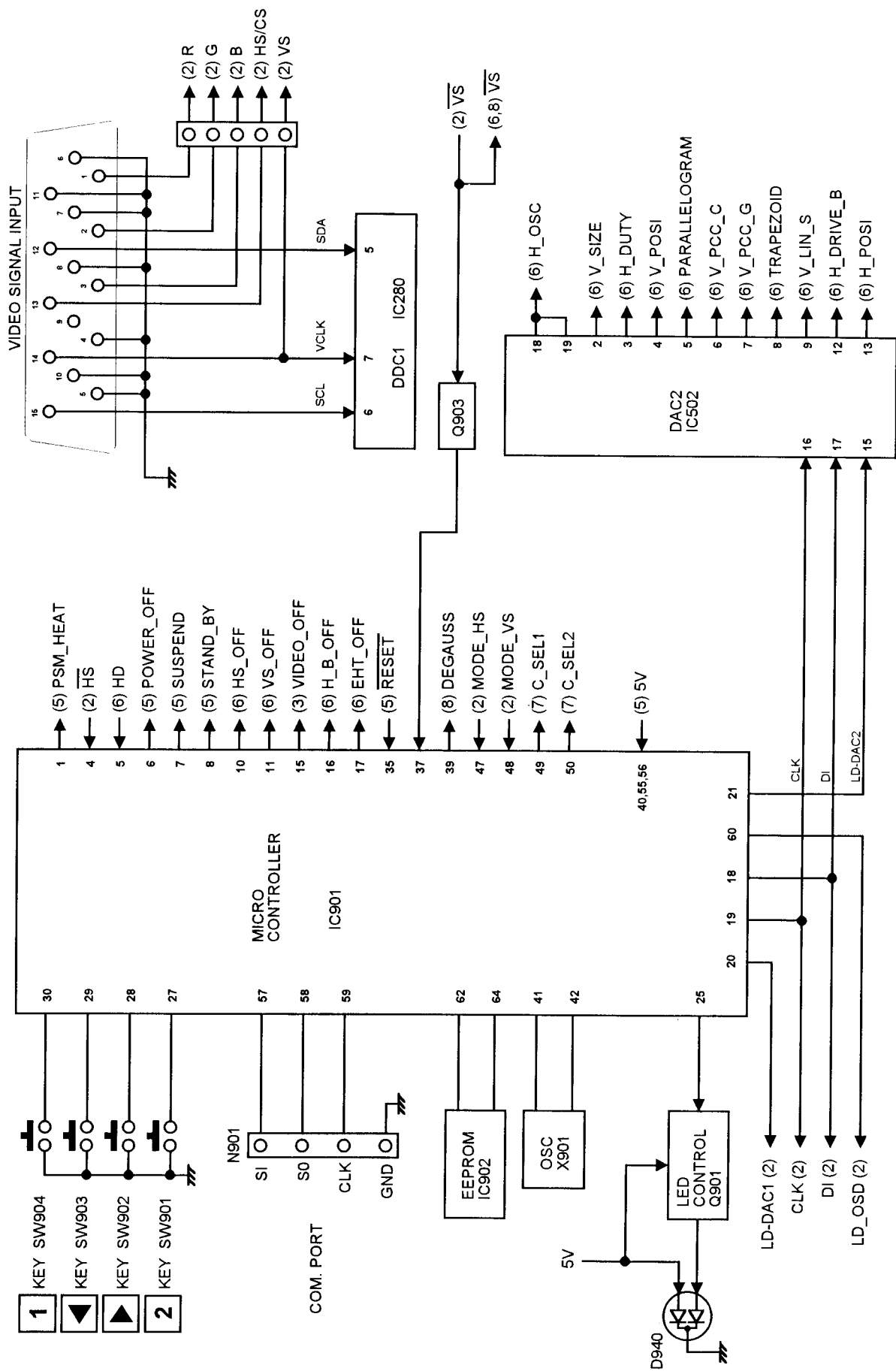
SHEET (6) / HV CONTROL / V OUT
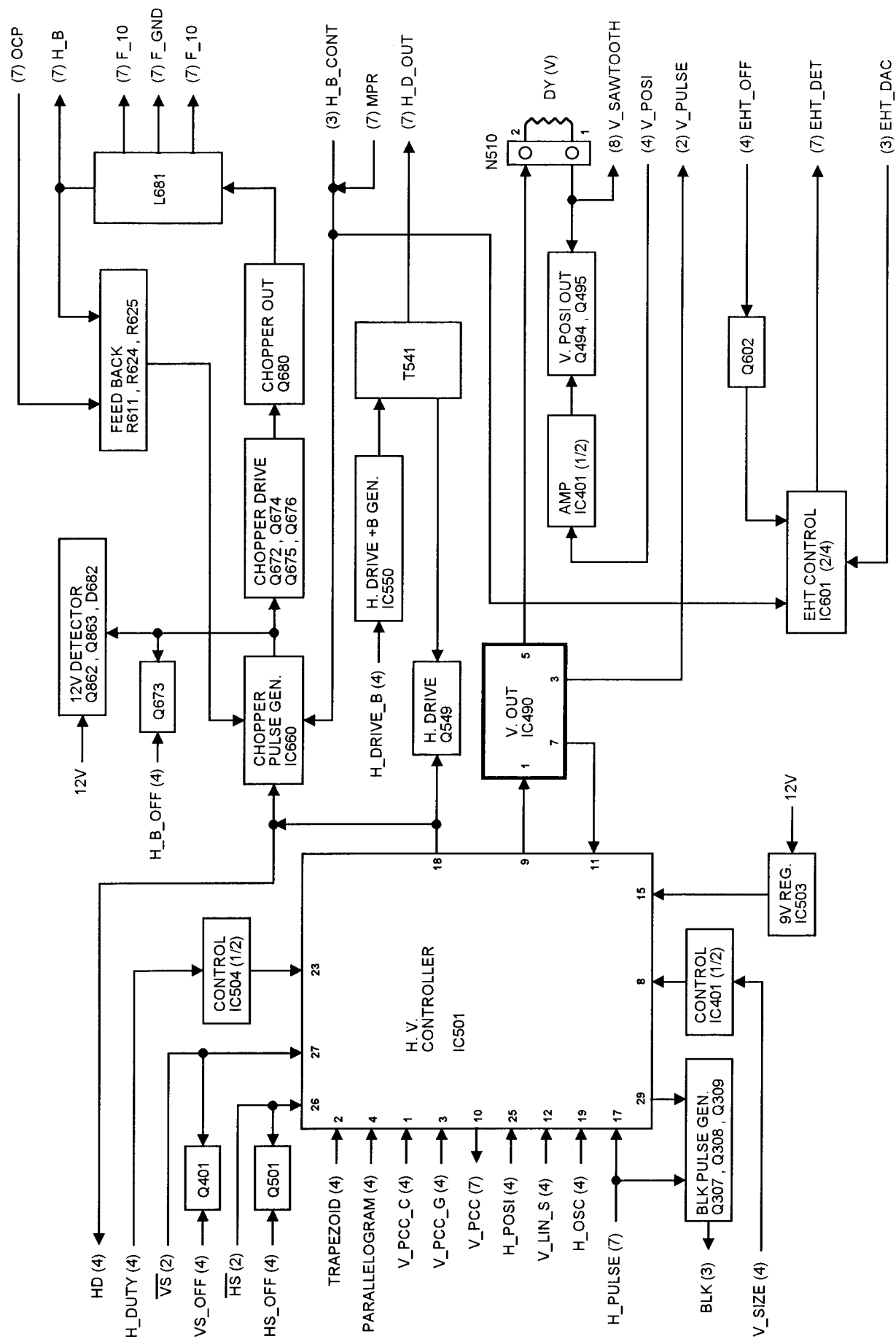
SHEET (7) / H OUT

SHEET (8) / DAF OUT / DEGAUSS

DEGAUSSING COIL

N802

C890

D891
D894

DEGAUSS
CONTROL
Q891

V_DAF_DEGAUSS_B (9)

DEGAUSS (4)

(7) DAF

V DAF OUT
Q319

H DAF OUT
T351

V DAF GENERATOR
IC302 , Q303

H DAF GENERATOR
D303 , D304
C381 ~ C386

V_SAWTOOTH (6)

H_PARA_1 (7)

Q561_D (7)

Q563_D (7)

H_PARA_2 (7)

– 45 –
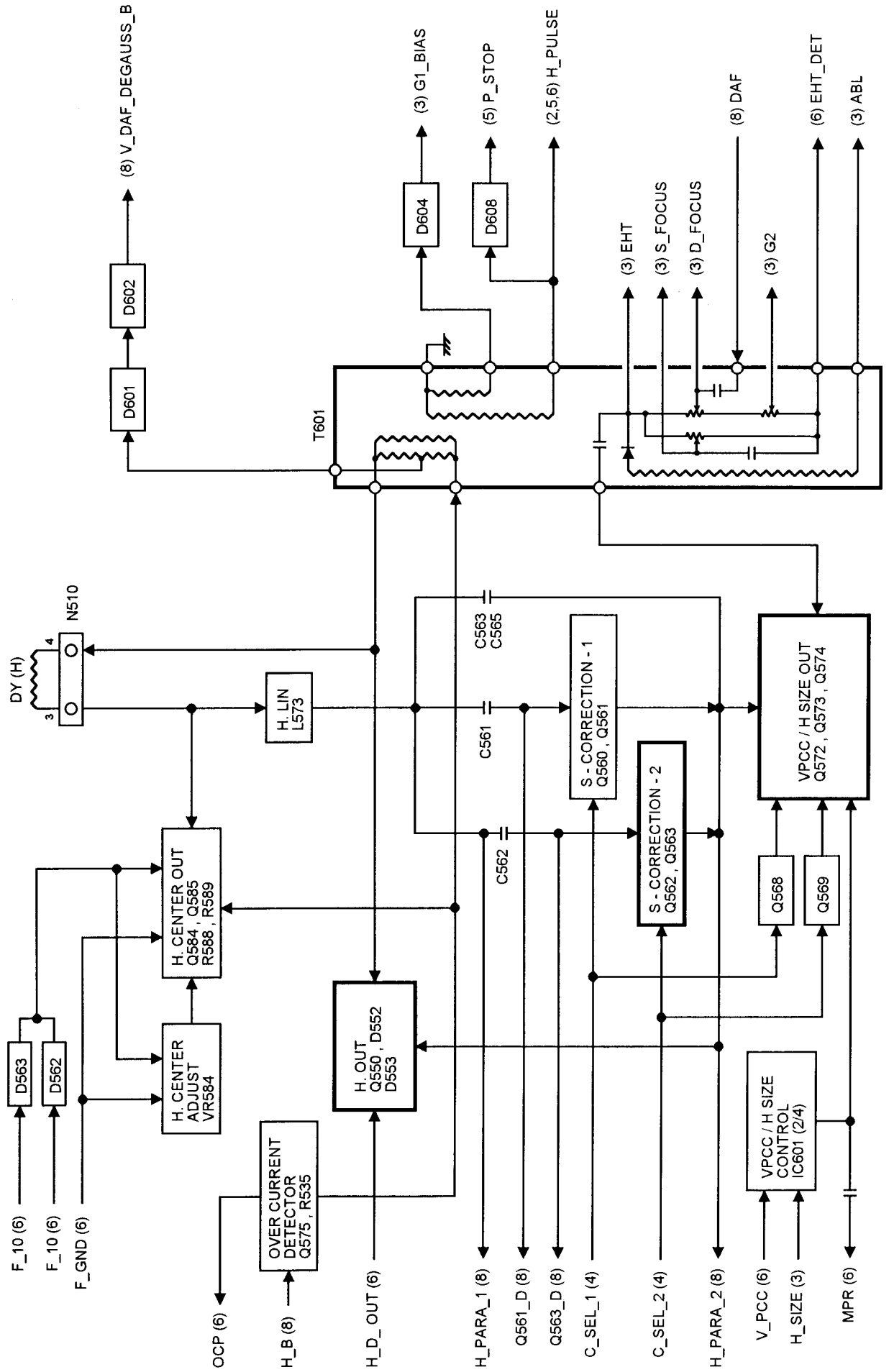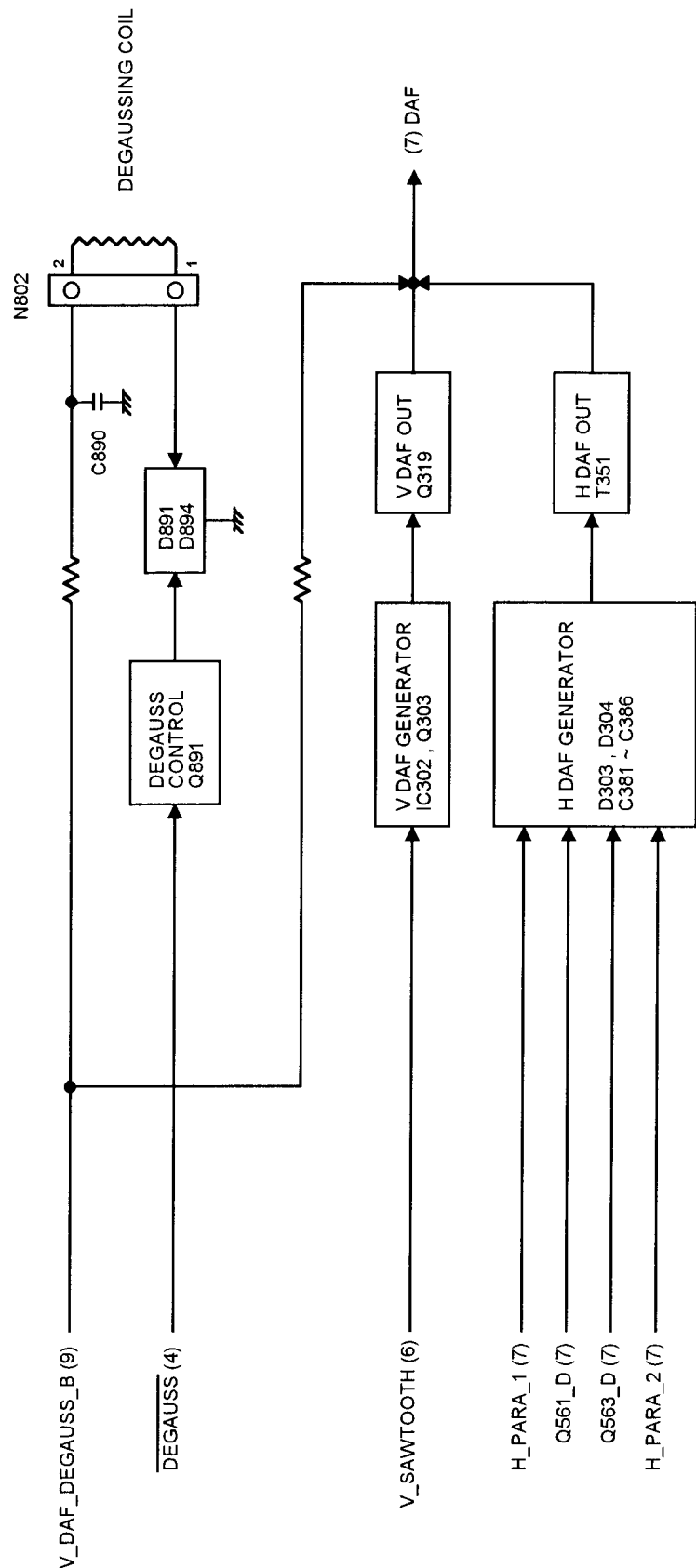
MAIN BOARD (Solder side)

MAIN BOARD (Parts side)

VIDEO BOARD (Solder side)

CHASSIS NO. HV5   TNP800970 [7]

VIDEO BOARD (Parts side)

CHASSIS NO. HV5

DIP

TNP800970 [7]
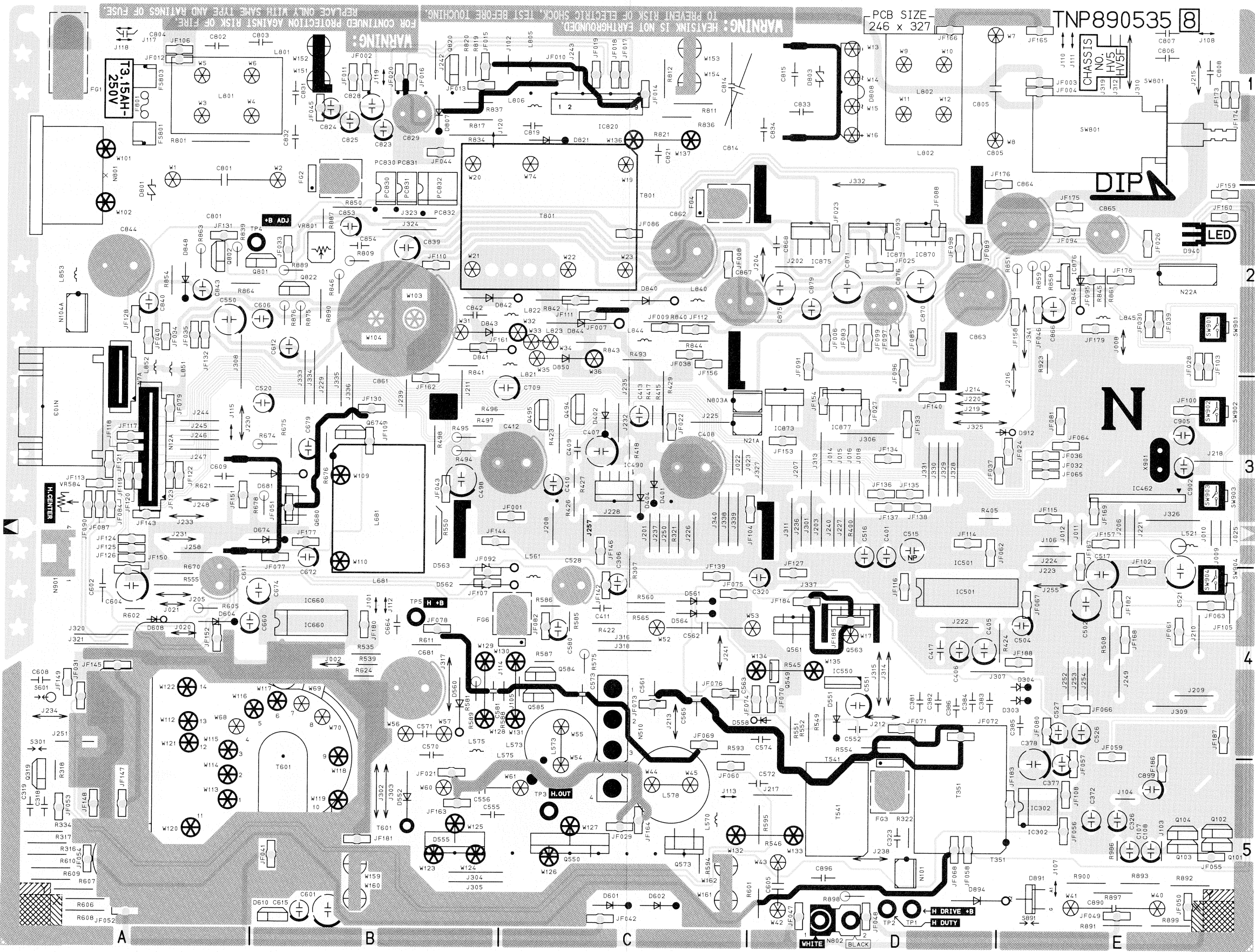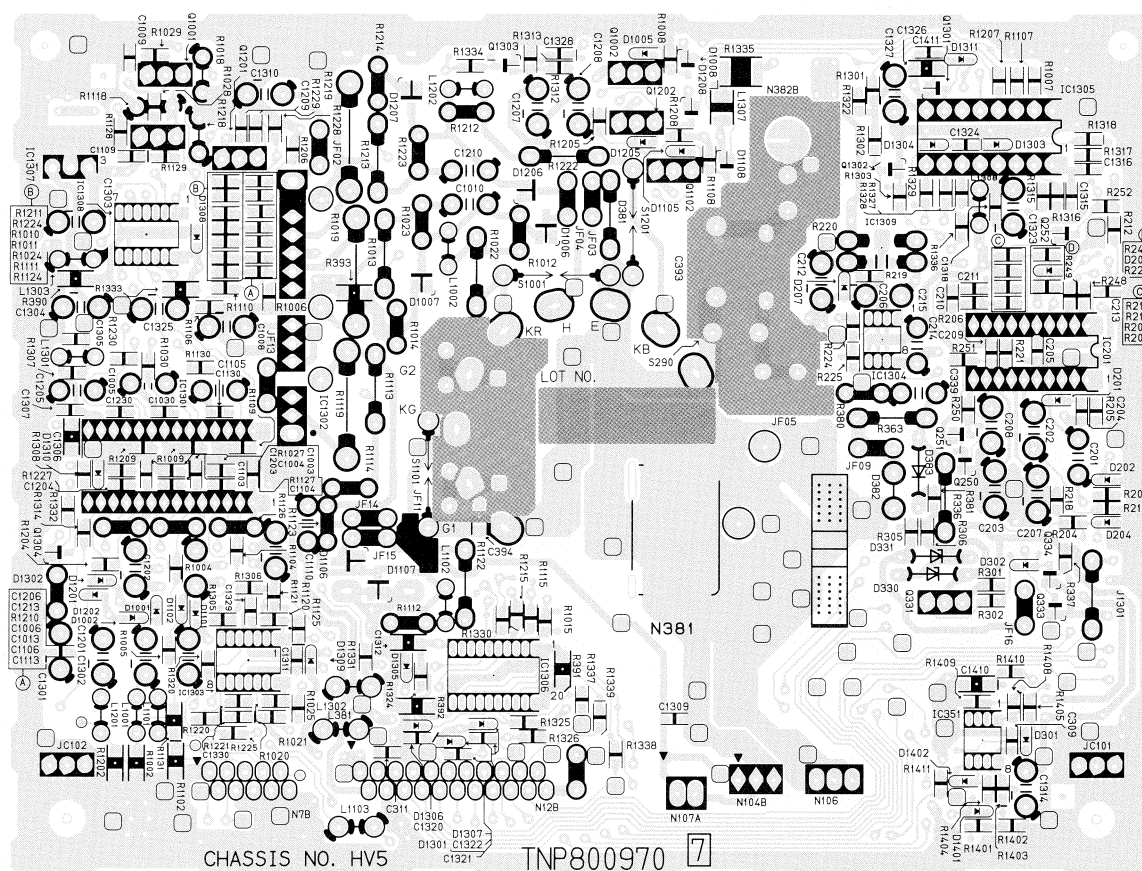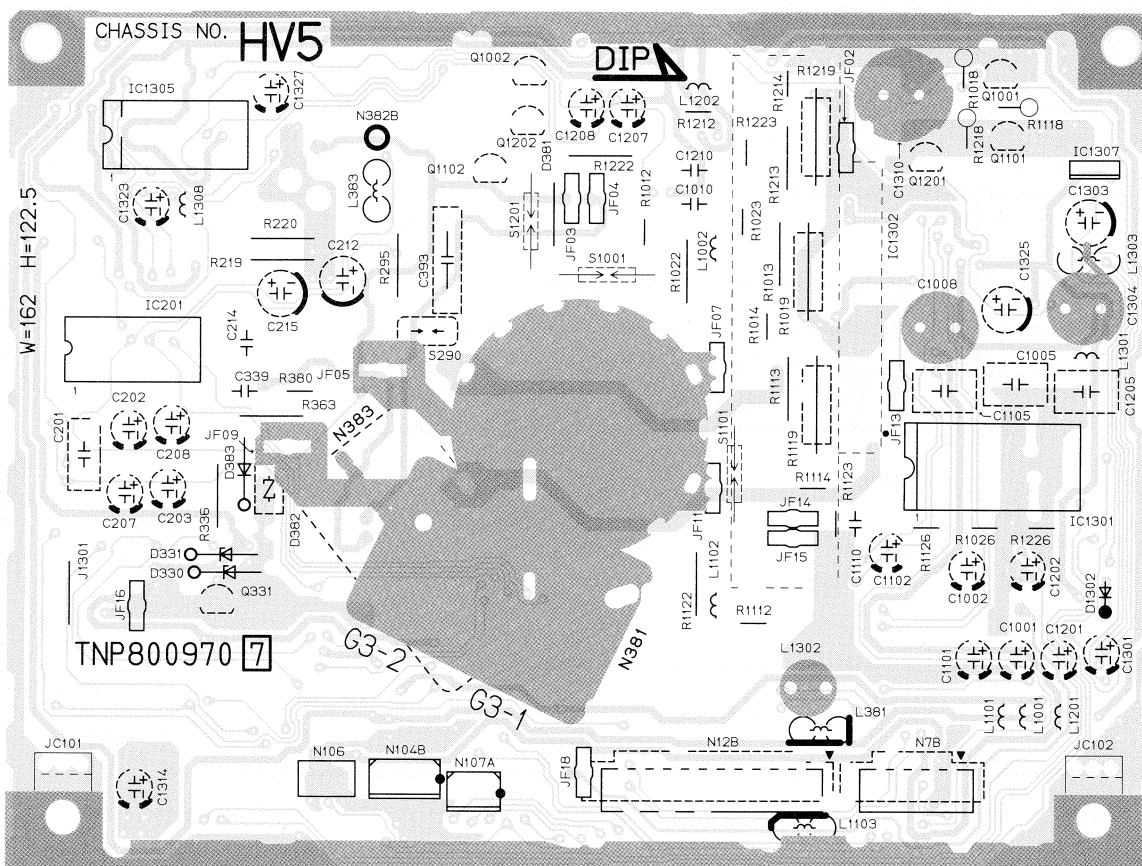
SCHEMATIC DIAGRAM

IMPORTANT SAFETY NOTICE

The component identified by shading or international symbol ⚠ on the following schematic diagrams incorporate special features important for protection from X-Radiation, fire and electrical shock hazards. When servicing it is essential that only manufacturer's specified parts be used for those critical components.

NOTES :

1. RESISTOR

All resistors are carbon 1/4W resistor, unless otherwise noted by the following marks.
Unit of resistance is ohm (Ω), (K = 1,000, M = 1,000,000)

○ :	Non Flammable	△ :	Solid
⊠ :	Metal Oxide	◎ :	Metal (Precision and high stability)
☐ :	Wire Wound	⬤ :	Thermistor
⊗ :	Fusible	⬤ :	Positive coefficient Thermistor
▨ :	Flame Proof Rectangular		

2. CAPACITOR

All capacitors are ceramic 50V capacitor, unless otherwise noted by the following marks.
Unit of capacitance is μF, unless otherwise noted.

⊣⊢ :	Electrolytic	Ⓜ :	Polyester
Ⓣ :	Tantalum	ⓜ :	Metalized Polyester
NP :	Bipolar	⊠ :	Polypropylene
Ⓢ :	Polystyrene	△ :	Mica
⊗ :	Temperature Compensation	○ :	Ceramic
		◎ :	Ceramic (SL)

3. COIL

Unit of inductance is μH, unless otherwise noted.

4. VOLTAGE MEASUREMENT

Voltage is measured by a digital meter receiving normal signal.

5. This schematic diagram is the letest at the time of printing and is subject to change without notice.

SERVICE NOTES :

This model has a section that does not share a common ground with the power supply section. The different sections are referred to as the HOT section and the COLD section in the precautions below.

1. Do not touch the HOT section and the COLD section at the same time. You may receive an electric shock.
2. Do not short the HOT section to the COLD section. This could blow the fuse or damage parts.
3. Never measure the HOT section and the COLD section at the same time when using tools such as oscilloscopes or multi-meters.
4. Always unplug the unit before beginning any operation such as removing the chassis.

SCHEMATIC DIAGRAM

CHASSIS No. : HV5

CHASSIS FAMILY No.: 17HV5

SIGNAL CABLE : TSX4515 or TSX4515-1
AC CORD ⚠ : TSX8484 or TSX8492
TSX8493 or TSX9416

TNP890535 MAIN PCB BLOCK

TNP800970 CRT PCB BLOCK

SHEET ①

REV. 6A

K7A   K7B

RED   RED
GREEN   GREEN
BLUE   BLUE
HS/CS   HS/CS
VS   VS

SHEET 2
SYNC SEPARATOR
OSD GENERATOR

RED
GREEN
BLUE
12V
6V-SENSE
CLAMP
FBKG
OSD-R
OSD-G
OSD-B
OSD-SW
OSD-PB
6V
DI
CLK

SHEET 3
VIDEO PRE AMP
VIDEO OUTPUT
OSD MIXING
ABL CONTROL
G1 BIAS

CRT

DEFLECTION YOKE

SHEET 9
TCO

RADIATOR

SHEET 4
MINI D-Sub15p
VIDEO SIGNAL INPUT

① KEY
◁ KEY
▷ KEY
② KEY

MCU
MEMORY (EEPROM)
POWER INDICATOR
DDC1
DIGITAL TO ANALOG CONVERTER
GREEN
AMBER

SHEET 5
PRIMARY CIRCUIT
SWITCHING CONTROL
AC IN   POWER SW
POWER TRANSFORMER
REGULATOR

HEATER2
6V
12V
24V

SHEET 8
(MOIRE REDUCTION)
DYNAMIC FOCUS
(Z-AXIS CORRECTION)
DEGAUSSING   (TCO)

DEGAUSSING COIL
(TILT) COIL

SHEET 6
H_OSC
CHOPPER CONTROL
GEOMETRY CORRECTION   H_DRIVE
V_PROCESSING
V_OUTPUT
V_CENTER
EHT REGULATOR

163V
33V
24V
12V

SHEET 7
H_OUTPUT
H_CENTERING
H_LIN CORRECTION
FBT

EHT
D.FOCUS
S.FOCUS
SCREEN

H_PULSE
V_PULSE

H_DY
V_DY

- 50 -

CRT PCB BLOCK

TNP800970

TNP800970

TNP890535

TNP890535

PRIMARY   SECONDARY

TNP890535

- 55 -

TNP890535

TNP890535

- 57 -

N12

+15V

100V

C14
0.1

D12
MA3150

R12
470K
±1%

R18
27K
1W

R15
18K
1W

C17
0.1

to CRT PCB (N107A)

GND

Q14
2SC4080QR

D13
MA174

J11

Z11

Q12
2SD602QR

R23
1M

N11

R25
100
±1%

C13
0.1

to RADIATOR

D11
MA152WA

Q11
2SK1470

R24
470K
±1%

Q13
2SC4080QR

Q15
2SA1575QR

out

in

g d
s

C11
2.2
16V

Sense
Capacitor

R22
0

R11
10K
±1%

R13
18K
±1%

R14
3.3K
±1%

R16
680
±1%

C12
0.22

C16
560P

N13

R19
47K
±1%

R21

R17
845
±1%

TO CRT GND

R20
47K
±1%

GND

TNP800975

− 58 −

── TROUBLE SHOOTING HINTS ──

```
┌─────────────────┐
│   NO  RASTER    │
└─────────────────┘
        │
    ╱CRT G1╲         NO        ┌──────────────────┐   if No Pules
   ╱-68.5 V 0-p?╲─────────────▶│ CHECK            │
    ╲          ╱              │ C339 , R330 , BLK line │
        │ YES                 └──────────────────┘
    ╱CRT G2 ╲       NO        ┌──────────────┐
   ╱ 204V ? ╲───────────────▶│ CHECK        │
    ╲       ╱                │ R295 , FBT   │
        │ YES                └──────────────┘
    ╱CRT KG,KR,KB╲   NO       ┌──────────────────┐
   ╱ 75.5V 0-p ? ╲──────────▶│  NO CHARACTERS   │
    ╲            ╱           └──────────────────┘
        │ YES
    ╱CRT EHT ╲     YES        ┌──────────────┐
   ╱ 23KV ?  ╲──────────────▶│ CHECK  CRT   │
    ╲        ╱               └──────────────┘
        │ NO
┌────────────────────────┐
│ DEFECTIVE HORIZONTAL   │
│ DEFLECTION CIRCUIT     │
└────────────────────────┘
```

```
    ╱Q331 (B)╲      YES       ┌──────────────────┐
   ╱ 11.42V ? ╲─────────────▶│ CHECK            │
    ╲         ╱              │ Q331 , D330 , D331 │
        │ NO                 │ D383 , G1_BAIS line │
    ╱Q333 (B)╲      YES       └──────────────────┘
   ╱  0V ?    ╲─────────────▶┌──────────────┐
    ╲         ╱              │ CHECK        │
        │ NO                 │ Q333 , Q334  │
┌──────────────┐            └──────────────┘
│ CHECK        │
│ IC901        │
│ VIDEO_OFF line │
└──────────────┘
```

```
┌───────────────────────┐
│  O.S.D.  DOES NOT WORK │
└───────────────────────┘
```

CONDITION : TURN OFF THE R.G.B. SIGNALS.

EXAMPLE : MISSING GREEN.

```
    ╱Q1101 (E)╲     YES       ┌──────────────────┐
   ╱ 2.26V p-p ? ╲──────────▶│  NO CHARACTERS   │
    ╲           ╱            └──────────────────┘
        │ NO
    ╱IC1305 (14)╲   YES       ┌──────────────┐
   ╱ 5.75V p-p ? ╲──────────▶│ CHECK  Q1101 │
    ╲           ╱            └──────────────┘
        │ NO
    ╱IC1305 (5)╲    NO
   ╱ 5.85V p-p ? ╲──────────┐
    ╲           ╱           │
        │ YES               │
    ╱IC1305 (10)╲           │
   ╱ 5.35V p-p ? ╲──────────┤
    ╲           ╱           │
        │ YES               │
    ╱IC1305 (6)(7)(8)╲ NO   ┌──────────────┐
   ╱ 5.8V p-p ?      ╲─────▶│ CHECK IC901  │
    ╲               ╱       └──────────────┘
        │ YES
┌──────────────────┐
│  CHECK IC1305    │
└──────────────────┘
```

```
    ╱Q1301 (B)╲     NO        ┌──────────────┐
   ╱ 12.4V p-p ? ╲──────────▶│ CHECK        │
    ╲           ╱            │ H PULES line │
        │ YES                └──────────────┘
┌──────────────────┐
│  CHECK  Q1301    │
└──────────────────┘

    ╱Q1302 (B)╲     NO        ┌──────────────┐
   ╱ 4V p-p ?  ╲────────────▶│ CHECK        │
    ╲          ╱             │ V PULES line │
        │ YES                └──────────────┘
┌──────────────────┐
│  CHECK  Q1302    │
└──────────────────┘
```

- **NO CHARACTERS**
- **MISSING ONE COLOR**

EXAMPLE : GREEN MISSING

CRT KG 75.5V 0-p ? — YES → NO RASTER
↓ NO

IC1302 (2) 1.94V p-p ? — YES → CHECK IC1302
↓ NO

Q1101 (B) 2.26V p-p ? — YES →
↓ NO

IC1308 (10) V p-p? — YES →
↓ NO

IC1301 (2) 2.32V p-p ? — NO → CHECK INPUT SIGNAL
↓ YES

IC1301 (3) 4.38V p-p ? — NO →
↓ YES

IC1301 (13) 10.08V ? — NO →
↓ YES

IC1301 (15) 4.59V ? — NO → CHECK IC1306
↓ YES

IC1301 (1)(16) 12V ? — NO → CHECK 12V LINE
↓ YES

CHECK IC1301

IC1307 (3) 8V ? — NO → CHECK IC1307 , 12 LINE
↓ YES

CHECK Q1101

IC1308 (12) 12.3V p-p? — YES → CHECK IC1308
↓ NO

IC1305 (12) 5.75V p-p ? — YES → CHECK Q1303
↓ NO

CHECK IC1305

IC1303 (3) 2.79V ? — YES → CHECK IC1303
↓ NO

CHECK IC1306

Q1304 (B) 0V ? — NO → CHECK IC901
↓ YES

IC1303 (5) 5.04V ? — YES → CHECK IC1303 , Q1304
↓ NO

CHECK IC1306

NO POWER

T801 (1) (6) VOLTAGE

AT AC100V	93V
AT AC120V	106V
AT AC220V	200V
AT AC240V	220V

C861(183V line) 183V ? — YES

NO

T801 (6) CORRECT ? — NO

YES

IC820 (4) 23.5V ? — NO → CHECK Q820 R836 , R837

YES

REPLACE IC820

NG

CHECK
D841 , D842 , D843
D844 , D845 , D850
IC870 , IC871 , IC873
IC875 , IC877 , Q801

ABNORMAL POWER SAVER

SIGNAL : SEPARATE SYNC

Please refer to block diagram for Power Save on page

IC901 (1),(6),(7),(8) 0V ? — YES → CHECK POWER SAVER

NO

IC901 (4) 5.3V p-p ? — NO

YES

IC901 (37) 5.4V p-p ? — YES → CHECK IC901

NO

Q252 (B) 3.44V p-p? — YES → CHECK Q252

NO

IC201 (8) V p-p? — YES → CHECK IC201

NO

CHECK INPUT SGNAL

T801 (1) CORRECT ? — YES → CHECK T801

NO

D808 (2)(3) AC CORRECT ? — YES → CHECK D808

NO

CHECK
AC FUSE
AC INPUT

ABNORMAL POWER INDICATOR

D940 (LED)   5V

Green

Red

C Q901 E

B 25

IC901

HS	VS	Q901(B)	COLOR
ON	ON	HIGH	GREEN
OFF	ON	LOW	YELLOW
ON	OFF	LOW	YELLOW
OFF	OFF	LOW	YELLOW

IC201 (6) 2.64V p-p ? — NO → CHECK INPUT SIGNAL

YES

CHECK IC201

DEFECTIVE HORIZONTAL DEFLECTION CIRCUIT

CONDITION
1024 X 768 / H 60KHz / V 75Hz

CRT EHT 23KV ? — YES → NO RASTER
NO ↓

Q550 (C) 1055V p-p ? — YES → CHECK FBT , D554
NO ↓

FBT (9) 128.6V ? — NO → DEFECTIVE H.+B OUTPUT CIRCUIT
YES ↓

Q550 (B) 11.1V 0-p ? — YES → CHECK Q550
NO ↓

T541 (P2) 4.3V p-p ? — YES → CHECK T541
NO ↓

T541 (P1) 16.16V ? — NO →
YES ↓

Q549 (G) 7.15V p-p ? — YES → CHECK Q549
NO ↓

IC501 (19) 2.6V ? — NO → CHECK IC502
YES ↓

IC501 (23) 8.04V ? — NO →
YES ↓

IC501 (16) 9V ? — NO → CHECK IC503
YES ↓

CHECK IC501

CHECK 183V line ← NO — **Q680 (D) 183V ?**
YES ↓
CHECK Q680

IC550 (1) 5V ? — NO → CHECK IC502
YES ↓
CHECK IC550 , 24V line

IC504 (3) 4.35V ? — YES → CHECK IC504
NO ↓
CHECK IC502

DEFECTIVE H. +B OUTPUT CIRCUIT

CONDITION
1024 X 768 / H 60KHz / V 75Hz

Q680 (G) 226V p-p ? — YES / NO ↓

Q674 (C) 226V p-p ? — YES → CHECK Q675 , Q676
NO ↓

Q672 (C) 1.38V p-p ? — YES → CHECK Q674
NO ↓

IC660 (6) 0.81V p-p ? — YES → CHECK Q672
NO ↓

Q673 (B) 0V ? — NO → CHECK IC901
YES ↓

Q683 (B) 0V ? — NO → CHECK Q682 , D682
YES ↓

IC660 (12) 4.52V p-p? — NO → CHECK IC501
YES ↓

IC660 (2) 3.93V ? — NO → CHECK IC1306
YES ↓

CHECK IC660 , Q683 , 12V line

H. SYNC DOES NOT HOLD

CONDITION :
1024 X 768 / H 60KHz / V 75Hz

```
IC501 (25)      NO
2.16V ?        ───────────────────────────┐
   │ YES                                   │
   ▼                                       ▼
IC501 (19)      NO                    IC201 (15)      NO
2.6V ?        ─────►  CHECK IC502     5.9V p-p ?    ─────►  CHECK IC201
   │ YES                                  │ YES
   ▼                                      ▼
CHECK IC501                          Q501 (B)        NO
                                     0V ?          ─────►  CHECK IC901
                                        │ YES
                                        ▼
                                     CHECK Q501
```

If no horizontal and/or vertical sync from PC,
then the power save circuit becomes active.

V. SYNC DOES NOT HOLD

```
IC501 (27)      YES
2.54V p-p ?   ─────►  CHECK IC501
   │ NO
   ▼
Q252 (B)        NO
3.44V p-p ?   ─────►  CHECK IC201
   │ YES
   ▼
Q401 (B)        NO
0V ?          ─────►  CHECK IC901
   │ YES
   ▼
CHECK Q252 , Q401
```

INCORRECT V.PCC

CONDITION :
1024 X 768 / H 60KHz / V 75Hz

```
IC501 (10)      NO
V p-p ?       ─────►  INCORRECT
   │ YES                H SIZE CONTROL
   ▼
IC501 (1)       NO
2.42V ?       ─────►  CHECK IC502
   │ YES
   ▼
IC501 (2)       NO
2.61V ?       ─────►  CHECK IC502
   │ YES
   ▼
IC501 (3)       NO
2.19V ?       ─────►  CHECK IC502
   │ YES
   ▼
IC501 (4)       NO
2.42V ?       ─────►  CHECK IC502
   │ YES
   ▼
CHECK IC501
```
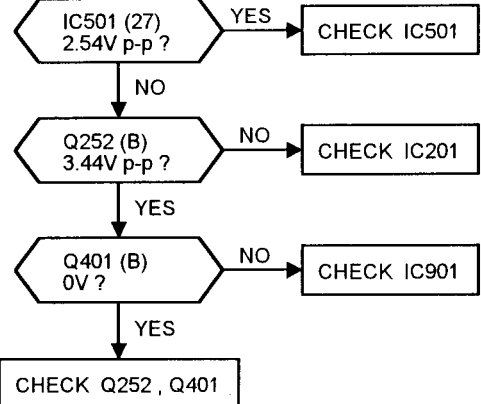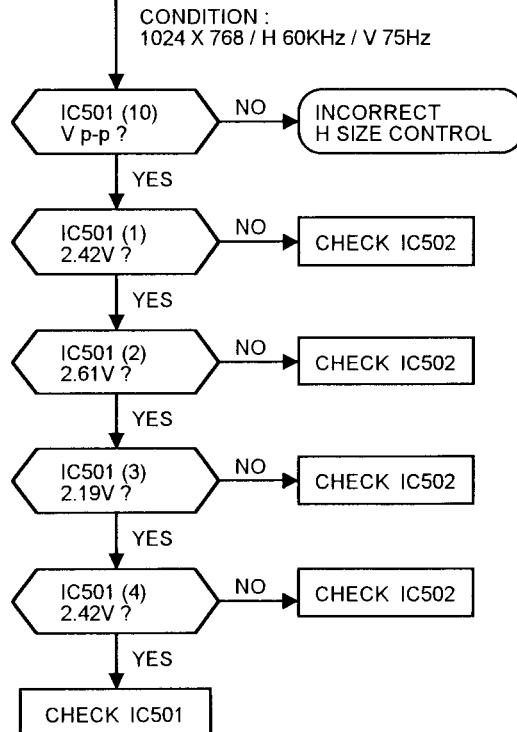
BRIGHT HORIZONTAL LINE APPEARS ON THE SCREEN

```
IC490 (5)       YES
48.6V p-p ?   ─────►  CHECK DY
   │ NO
   ▼
IC490 (7)       NO
3.44V ?       ─────►  CHECK IC501
   │ YES
   ▼
CHECK IC490
```

INCORRECT H. POSITION CONTROL

CONDITION
1024 X 768 / H 60KHz / V 75Hz

RASTER POSITION CENTER ? — YES →

NO ↓

TURN VR584 127.8V ~ 129.3V ? — YES → CHECK Q584 , Q585

NO ↓

CHECK L681 , F10 line

IC501 (25) 2.16V ? — YES → CHECK IC501

NO ↓

CHECK IC502

INCORRECT H. SIZE CONTROL

CONDITION
1024 X 768 / H 60KHz / V 75Hz

Q573 (B) 1.14V ? — YES → CHECK Q573

NO ↓

Q572 (B) 5.1V p-p? — YES → CHECK Q572

NO ↓

Q574 (B) 0.74V ? — YES → CHECK Q574

NO ↓

IC601 (10) 2.91V ? — YES → CHECK IC601

NO ↓

CHECK IC1306

INCORRECT V. SIZE CONTROL

CONDITION
1024 X 768 / H 60KHz / V 75Hz

IC490 (7) 3.44V ? — YES → CHECK IC490

NO ↓

IC501 (8) 1.98V ? — YES → CHECK IC501

NO ↓

IC401 (5) 2.21V ? — YES → CHECK IC401

NO ↓

CHECK IC502

INCORRECT V. POSITION CONTROL

CONDITION
1024 X 768 / H 60KHz / V 75Hz

Q494 (B) 16V ? — YES → CHECK Q494

NO ↓

IC401 (3) 6.83V ? — YES → CHECK IC401

NO ↓

CHECK IC502

— Important Safety Notice —

Components identified by the International symbol ⚠ have special characteristics important for safety.
When replacing any of these components use only manufacture's specified parts.

RESISTOR

PART NAME & DESCRIPTION			
TYPE		ALLOWANCE	
C	Carbon	F	± 1%
F	Fuse	J	± 5%
M	Metal Oxide	K	± 10%
S	Solid	M	± 20%
W	Wire Wound	G	± 2%

Example: ERD25TJ104 (C) 100K (J) 1/4W
Part No. / Description

CAPACITOR

PART NAME & DESCRIPTION			
TYPE		ALLOWANCE	
C	Ceramic	C	± 0.25pF
E	Electrolytic	D	± 0.5pF
P	Polyester	F	± 1pF
S	Styrol	J	± 5%
T	Tantalum	K	± 10%
PP	Polypropylene	L	± 15%
		M	± 20%
		P	+100% – 0%
		Z	+80% – 20%

Example: ECKF1H103ZF (C) 0.01μF (Z) 50V
Part No. / Description

	Ref.No.	Part No.	Description		Ref.No.	Part No.	Description
		CABINET & MAIN PARTS			21	TBX8752201	KNOB(CONTROL)
					22	TES8365	FBT SPRING
					23	TES8366	FBT SPRING(HOOK)
⚠	1	TKY859511	BOTTOM CABINET			TES9148-3	SPRING(CRT EARTH)
⚠	2	TKE8711B05	ESCUTCHEON<NM>		24	TES9531	CRT PCB HOLDER
⚠	2	TTE8711B05-3	ESCUTCHEON<-E,-G,-SW,-U>				
⚠	3	TKU894207-1H	REAR COVER W/MODEL PLATE <NM>		25	TMM15404-1	SPACER RING
						TMM15414	CLAMPER(SMALL)
						TMM7464	LEAD CLAMPER(SMALL)
⚠	3	TKU894207-3H	REAR COVER W/MODEL PLATE <-E,-G>			TMM7468	CLAMPER
					26	TMM85576-1	CRT RUBBER
⚠	3	TKU894207-5H	REAR COVER W/MODEL PLATE <-SW>			TMM85586	RUBBER(WEDGE)
						TMKG001	RUBBER
⚠	3	TKU894207-6H	REAR COVER W/MODEL PLATE <-U>			TMKG003	RUBBER
					27	TMK84990	SET LEG
	4	TKX871701	MAIN PCB HOLDER			TMK85572	FERRITE STICK
	5	TKK859310	LED GUIDE				
		TKK859745	CONNECTOR COVER			TMK85584	SWITCH BARRIER
		TKK859973	BLIND COVER			THEC0019	SCREW(FOR CRT PCB HOLDER)
	6	TKK859979	PEDESTAL			THT1027	SCREW(FOR CRT)
	7	TKK859980	CENTER POST			THT1069	SCREW(FOR SHIELD CASE)
	8	TUX86195	BOTTOM PLATE BRACKET			XTB4+12J	SCREW
	9	TUX87721	BOTTOM PLATE			XTN5+16A	SCREW
		TSAA3001	RADIATOR			XTN5+25AFC	SCREW
						XYA4+EF8	SCREW
	10	TUC86948	EARTH METAL(R-UPPER)			XYE3+EJ10	SCREW
	11	TUC86949	EARTH METAL(L-UPPER)	⚠	30	M41KXH140X-W	PICTURE TUBE
	12	TUC86950-1	EARTH METAL(R-UNDER)		31	TNP800970-21	PC BOARD W/COMPONENT(CRT)
	13	TUC86951	EARTH METAL(L-UNDER)			TNP800975-23	PC BOARD W/COMPONENT(TCO)
		TUC87308	EARTH METAL(D-SUB)	⚠	32	TNP890535-21	PC BOARD W/COMPONENT(M)
				⚠	33	MEY41GHD	DEFLECTION YOKE
	15	TUC87566-2	SHIELD CASE		34	ETC33D53NC	CONVERGENCE COIL
	16	TUC87567-1	SHIELD CASE(REAR)				
	17	TUC87579	SHIELD CASE(CRT PCB)	⚠	35	TLK859098T1	DEGAUSS COIL
	18	TUC87580	SHIELD PLATE(CRT PCB)			TSXX004	1P TERMINAL CORD
⚠		TBMC042	MODEL PLATE<-E,-G>			TSXX005	2P CONNECTOR CORD
						TSXX006	2P/3P CONNECTOR CORD
⚠	19	TBMC043	MODEL PLATE<-U>			TSXX008	2P CONNECTOR CORD
⚠	19	TBMC044	MODEL PLATE<-SW>				
⚠	19	TBM850546	MODEL PLATE<NM>			TSX4515	SIGNAL CORD<-E,-t,-SW>
	20	TBX8751301	KNOB(POWER SWITCH)			TSX4515-1	SIGNAL CORD<-U,NM>

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
△	TSX8484	POWER CORD<-E,-G>	IC877	SI-3025F	HYBRID IC
△	TSX8492	POWER CORD<-SW>	IC901	TVC80219-1E	IC
△	TSX8493	POWER CORD<-U>	IC902	TVR8AJ023	IC
△	TSX9416	POWER CORD<NM>	IC1301	M52326SP	IC
△ 36	TSX9809	FLAT CORD(10P)	IC1302	EY07PY2	HYBRID IC
37	TSX9810	FLAT CORD(22P)	IC1303	LM324MX	IC
	TJT8999	HEXAGON POST	IC1304	LM2931CMX	IC
	TXA3A11733VM	CRT EARTH LEAD	IC1305	LSC4330	IC
		<-E,-G,-SW,-U>	IC1306	MB88346BPFTF	IC
	TXA3A11733NM	CRT EARTH LEAD<NM>	IC1307	L78M08T	IC
	TSN85511	MAGNET	IC1308	MM74HC4066MX	IC
	T4F31519Q	POLYESTER TAPE(20M)			
	T4F72425Q	COTTON TAPE(55M)			TRANSISTORS
	T4F90240	MAIRA TAPE			
	TPCA02301	OUTER CARTON	Q11	2SK1470TD	TRANSISTOR
			Q12	2SD602R	TRANSISTOR
		<-E,-G,-SW,-U>	Q13	2SC4080DETD	TRANSISTOR
	TPC8552701	OUTER CARTON<NM>	Q14	2SC4080DETD	TRANSISTOR
	TXAPD2D1751	FILLER	Q15	2SA1575DETD	TRANSISTOR
	TPE814109	SET COVER<NM>			
	TPE814109-2	SET COVER<-E,-G,-SW,-U>	Q250	XDC114EU	TRANSISTOR
			Q251	XDA114EU	TRANSISTOR
	TQE8513-1	FUN BAG COVER<NM>	Q252	XDC114EU	TRANSISTOR
	TQE8513-2	FUN BAG COVER	Q303	2SC4081R	TRANSISTOR
		<-E,-G,-SW,-U>	Q307	2SC3938R	TRANSISTOR
△	TQBE0006	INSTRUCTION BOOK			
		<-E,-G,-SW,-U>	Q308	XDC114EU	TRANSISTOR
			Q309	2SC3938R	TRANSISTOR
△	TQB820269	INSTRUCTION BOOK<NM>	Q319	2SC4620V25	TRANSISTOR
	TQDE18002	WARRANTY CARD<-E>	Q331	2SA1018Q	TRANSISTOR
	TQD8518073-1	WARRANTY CARD<-U>	Q333	XDC114EU	TRANSISTOR
	TQD1712010	PASS CARD			
		<-E,-G,-SW,-U>	Q334	XDC114EU	TRANSISTOR
			Q401	XDC114EU	TRANSISTOR
	TQF80720	HWC LABEL<NM>	Q494	2SD1994AQ	TRANSISTOR
	TQF82880	HIGH VOLTAGE LABEL<NM>	Q495	2SB1329R	TRANSISTOR
	TQF83825-6	SERIAL NO. LABEL	Q501	XDC114EU	TRANSISTOR
	TQF85363-2	CARTON LABEL<-G>			
	TQF85363-3	CARTON LABEL<-SW>	Q549	2SK2015Z	TRANSISTOR
			Q550	2SC5243002FD	TRANSISTOR
	TQF85363-4	CARTON LABEL<-U>	Q560	XDC114EU	TRANSISTOR
	TQF85363-8	CARTON LABEL<-E>	Q561	2SK2161YB	TRANSISTOR
△	TQF86550	EARTH CAUTION LABEL<-SW>	Q562	XDC114EU	TRANSISTOR
	TQF86574	US PATENTS LABEL<NM>			
	TQF86583-1	POWER CORD LABEL<-U>	Q563	2SK2161YB	TRANSISTOR
			Q568	XDC114EU	TRANSISTOR
△	TQF86608	EARTH CAUTION LABEL	Q569	XDC114EU	TRANSISTOR
		<-E,-G,NM>	Q572	2SB1220R	TRANSISTOR
			Q573	2SD1273PLB	TRANSISTOR
		I.C	Q574	2SD1824R	TRANSISTOR
			Q575	2SB792AR	TRANSISTOR
IC201	M52346SP	IC	Q584	2SD2133S	TRANSISTOR
IC280	24LC21TISN	IC	Q585	2SB1413S	TRANSISTOR
IC302	TDA8145	IC	Q602	XDC114EU	TRANSISTOR
IC351	LM358MX	IC			
IC401	LM358MX	IC	Q672	2SC3938R	TRANSISTOR
			Q673	XDC114EU	TRANSISTOR
IC490	TDA9302H	IC	Q674	2SC4212H	TRANSISTOR
IC501	UPC1883	IC	Q675	2SD1664Q	TRANSISTOR
IC502	MB88346BPFTF	IC	Q676	2SB1132Q	TRANSISTOR
IC503	AN78L09M-E1	IC			
IC504	LM358MX	IC	Q680	IRFI634G	TRANSISTOR
IC550	AN6531	IC	Q682	XDC114EU	TRANSISTOR
IC601	LM324MX	IC	Q683	XDC114EU	TRANSISTOR
IC660	TVS1103	IC	Q801	2SB1414R	TRANSISTOR
IC820	STR-S6533	HYBRID IC	Q802	2SC1473QNC	TRANSISTOR
IC870	M5F7824L	IC			
			Q803	2SD1819AR	TRANSISTOR
IC871	SI-3120FALF	IC	Q809	2SC3938R	TRANSISTOR
IC873	SI-3240CA	HYBRID IC	Q811	XDC114EU	TRANSISTOR
IC876	L78LR05C-MA	IC	Q812	XDC114EU	TRANSISTOR

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
Q813	XDC114EU	TRANSISTOR	D563	ERC30-02	DIODE
Q814	XDC114EU	TRANSISTOR	D564	EU02A	DIODE
Q820	2SC4620V25	TRANSISTOR	D601	ERA34-10	DIODE
Q822	2SC1473AR	TRANSISTOR	D602	ERA34-10	DIODE
Q823	XDC114EU	TRANSISTOR	D603	1SS353	DIODE
Q824	2SD1820AR	TRANSISTOR	D604	EU02	DIODE
Q825	2SB1220R	TRANSISTOR	D605	1SS353	DIODE
Q891	XDA114EU	TRANSISTOR	D608	MA167	DIODE
Q901	XDA114EU	TRANSISTOR	D661	DTZTT1115C	DIODE
Q903	XDC114EU	TRANSISTOR	D667	1SS353	DIODE
Q1001	2SC3811R	TRANSISTOR	D668	1SS353	DIODE
Q1002	2SC3811R	TRANSISTOR	D669	1SS353	DIODE
Q1101	2SC3811R	TRANSISTOR	D672	1SS353	DIODE
Q1102	2SC3811R	TRANSISTOR	D674	ERA18-04	DIODE
Q1201	2SC3811R	TRANSISTOR	D680	DTZTT1115C	DIODE
Q1202	2SC3811R	TRANSISTOR	D681	CB903-4	DIODE
Q1301	XDC114EU	TRANSISTOR	D682	DTZTT117R5C	DIODE
Q1302	XDC114EU	TRANSISTOR	⚠ D801	ERZVEAV431	VARISTOR
Q1303	2SC3938R	TRANSISTOR	⚠ D803	ERZVEAV431	VARISTOR
Q1304	XDC114EU	TRANSISTOR	D807	EG01Z	DIODE
	DIODES		D808	RBV406M	DIODE
			D809	1SS353	DIODE
D11	MA152WA	DIODE	D810	DTZTT1124B	DIODE
D12	MA3150M	DIODE	D817	DTZTT1118B	DIODE
D13	MA174	DIODE	D821	ERA34-10	DIODE
D201	1SS353	DIODE	D841	TVSRG2A	DIODE
D205	DTZTT115R6B	DIODE	D842	ERC3806	DIODE
D207	DTZTT115R1B	DIODE	D843	TVSRG2	DIODE
D280	DTZTT115R6B	DIODE	D844	RL4Z	DIODE
D281	DTZTT115R6B	DIODE	D845	ERC30-02	DIODE
D282	DTZTT115R6B	DIODE	D847	DTZTT1124A	DIODE
D283	DTZTT115R6B	DIODE	D848	EM01Z	DIODE
D302	DTZTT119R1C	DIODE	D850	TVSRG2A	DIODE
D303	EU02Z	DIODE	D852	DTZTT116R8A	DIODE
D304	EU02Z	DIODE	D871	DTZTT1118B	DIODE
D305	1SS353	DIODE	D891	T410-800D	DIODE
D306	1SS353	DIODE	D894	ERB4408	DIODE
D307	1SS353	DIODE	D902	DTZTT115R1B	DIODE
D308	1SS353	DIODE	D904	RB706F40	DIODE
D330	HZT33-09TD	DIODE	D905	DTZTT115R6B	DIODE
D331	HZT33-09TD	DIODE	D907	DTZTT115R6B	DIODE
D381	TAX125X103MA	VARISTOR	D912	MTZJ5R6B	DIODE
D382	ERZC05DK201U	VARISTOR	D913	DTZTT115R6B	DIODE
D383	EU02Z	DIODE	D914	DTZTT115R6B	DIODE
D401	EU02	DIODE	D915	DTZTT115R6B	DIODE
D402	MA7100A	DIODE	D940	SML1816W	DIODE(LED)
D404	MA1180L	DIODE	D941	DTZTT112R4B	DIODE
D405	1SS353	DIODE	D946	MA142WK	DIODE
D408	DTZTT1136B	DIODE	D947	DTZTT115R6B	DIODE
D497	MA30WA	DIODE	D948	DTZTT115R6B	DIODE
D501	1SS353	DIODE	D950	DTZTT115R6B	DIODE
D505	DTZTT116R2B	DIODE	D951	DTZTT115R6B	DIODE
D507	DTZTT114R7B	DIODE	D960	DTZTT115R6B	DIODE
D550	1SS353	DIODE	D961	DTZTT115R6B	DIODE
D551	ERA81004	DIODE	D962	DTZTT115R6B	DIODE
D552	RP3F014-302	DIODE	D963	DTZTT115R6B	DIODE
D555	FMP-3FU	DIODE	D1001	1SS353	DIODE
D556	1SS353	DIODE	D1002	1SS353	DIODE
D558	DTZTT1115C	DIODE	D1008	MA142WK	DIODE
D560	TVSRG2A	DIODE	D1101	1SS353	DIODE
D561	EU02A	DIODE	D1102	1SS353	DIODE
D562	ERC30-02	DIODE	D1108	MA142WK	DIODE

Ref.No.	Part No.	Description			
D1201	1SS353	DIODE			
D1202	1SS353	DIODE			
D1208	MA142WK	DIODE			
D1302	MA29TA	DIODE			
D1303	DTZTT115R6B	DIODE			
D1304	DTZTT115R6B	DIODE			
D1305	DTZTT115R6B	DIODE			
D1306	DTZTT115R6B	DIODE			
D1307	DTZTT115R6B	DIODE			
D1311	DTZTT115R6B	DIODE			
D1401	1SS353	DIODE			
D1402	1SS353	DIODE			
		COIL & TRANSFORMERS			
L381	TSK8029	FERRITE CORE			
L383	TSK8029	FERRITE CORE			
L521	ELEY561KA	PEAKING COIL			
L561	TLUACNB2R2M	PEAKING COIL			
L570	ELCO8DO96D	CHOKE COIL			
L573	TLHE001	COIL			
L575	TLH85815T	COIL			
L578	TLH85819Z	COIL			
L681	TLP85709R	CHOKE COIL			
⚠ L801	ELF18D656J	LINE FILTER			
⚠ L802	ELF18D656J	LINE FILTER			
L805	TSK8031	FERRITE CORE			
L821	EXCELDR35C	LC COMBINATION			
L822	EXCELDR35C	LC COMBINATION			
L823	EXCELDR35C	LC COMBINATION			
L844	EXCELDR35C	LC COMBINATION			
L845	EXCELDR35C	LC COMBINATION			
L851	EXCELDR35C	LC COMBINATION			
L852	EXCELDR35C	LC COMBINATION			
L853	EXCELDR35C	LC COMBINATION			
L1002	ELEXHR33KA	PEAKING COIL			
L1101	ELEXHR22KA	PEAKING COIL			
L1102	ELEXHR33KA	PEAKING COIL			
L1202	ELEXHR33KA	PEAKING COIL			
L1301	ELEXH100KA	PEAKING COIL			
L1302	TLUACNB821K	PEAKING COIL			
L1303	TSK8029	FERRITE CORE			
L1307	ELJFA100KB	CHIP COIL			
L1308	ELEXH151KA	PEAKING COIL			
T351	TLH85906Z	TRANSFORMER			
T541	ETS22AE119AC	TRANSFORMER			
⚠ T601	ETF39L86AZ	FLYBACK TRANSFORMER			
⚠ T801	TLP85233R1	TRANSFORMER			
		CONTROL			
VR584	EVMEGSAOOB13	CONTROL B	1K OHM		
VR801	EVMF6SAOOB23	CONTROL B	2K OHM		
		CAPACITORS			
C11	ECUX1C225ZFW	C	2.2UF	Z	16V
C12	ECUX1C224KBX	C	0.22UF	K	16V
C13	ECUX1H104ZFX	C	0.1UF	Z	50V
C14	ECUX1H104ZFX	C	0.1UF	Z	50V
C16	ECUX1H561KBN	C	560PF	K	50V
C201	ECQV1H474JM	P	0.47UF	J	50V
C202	ECEA1HGEO10	E	1UF		50V
C203	ECEA1HGEO10	E	1UF		50V

Ref.No.	Part No.	Description			
C204	ECUX1H472KBG	C	4700PF	K	50V
C205	ECUX1H103KBG	C	0.01UF	K	50V
C206	ECUX1H103KBG	C	0.01UF	K	50V
C207	ECEA1HGE2R2	E	2.2UF		50V
C208	ECEA1HGER47	E	0.47UF		50V
C209	ECUX1H333KBX	C	0.033UF	K	50V
C210	ECUX1H102KBN	C	1000PF	K	50V
C211	ECUX1H102KBN	C	1000PF	K	50V
C212	ECEA1CGE101	E	100UF		16V
C213	ECUX1H102KBN	C	1000PF	K	50V
C214	ECQV1H474JM	P	0.47UF	J	50V
C215	ECEA1CGE101	E	100UF		16V
C280	ECUX1H103KBG	C	0.01UF	K	50V
C305	ECUX1H221KBN	C	220PF	K	50V
C306	ECEA1HGE100	E	10UF		50V
C309	ECUX1H103KBG	C	0.01UF	K	50V
C318	ECKD2H151KB5	C	150PF	K	500V
C319	ECQV1H473JM	P	0.047UF	J	50V
C320	ECEA1HGE100	E	10UF		50V
C321	ECUX1H222JCX	C	2200PF	J	50V
C323	ECKD3A102JBP	C	1000PF	J	1KV
C326	ECEA1EGE100	E	10UF		25V
C328	ECUX1H103KBG	C	0.01UF	K	50V
C339	ECQE2473KF	P	0.047UF	K	200V
C372	ECEA1EGE330	E	33UF		25V
C375	ECUX1H103KBG	C	0.01UF	K	50V
C376	ECUX1H103KBG	C	0.01UF	K	50V
C377	ECEA1EGE100	E	10UF		25V
C378	ECEA1VGE101	E	100UF		35V
C381	ECQE2123JF	P	0.012UF	J	200V
C382	ECQE2124JF	P	0.12UF	J	200V
C383	ECQE2103JF	P	0.01UF	J	200V
C385	ECQV1H105JM	P	1.0UF	J	50V
C386	ECQE2103JF	P	0.01UF	J	200V
C393	ECKD3D272KBP	C	2700PF	K	2KV
C394	TCUX2H101JCM	C	100PF	J	500V
C401	ECEA1HGEO10	E	1UF		50V
C402	ECUX1H103KBG	C	0.01UF	K	50V
C403	ECUX1H103KBG	C	0.01UF	K	50V
C404	ECUX1H103KBG	C	0.01UF	K	50V
C405	ECEA1CGE101	E	100UF		16V
C406	ECEA1CGE470	E	47UF		16V
C407	ECEA1EGE221	E	220UF		25V
C408	ECEA1HGE102	E	1000UF		50V
C409	ECQV1H224JM	P	0.22UF	J	50V
C410	ECEA1HGE100	E	10UF		50V
C412	ECEA1VGE222	E	2200UF		35V
C413	ECEA1EGE470	E	47UF		25V
C414	ECUX1H331KBN	C	330PF	K	50V
C415	ECYX1H682JCW	C	6800PF	J	50V
C417	ECQV1H334JM	P	0.33UF	J	50V
C418	ECUX1H104ZFX	C	0.1UF	Z	50V
C419	ECUX1H104ZFX	C	0.1UF	Z	50V
C421	ECUX1H683KBW	C	0.068UF	K	50V
C498	ECEA1VGE101	E	100UF		35V
C502	ECEA1CGE221	E	220UF		16V
C503	ECUX1H103KBG	C	0.01UF	K	50V
C504	ECEA1EGE100	E	10UF		25V
C505	ECUX1H102JCX	C	1000PF	J	50V
C506	ECUX1H681JCX	C	680PF	J	50V
C507	ECUX1H103KBG	C	0.01UF	K	50V
C508	ECUX1C225ZFW	C	2.2UF	Z	16V

Ref.No.	Part No.		Description		
C509	ECUX1H104ZFX	C	0.1UF	Z	50V
C511	ECUX1H104ZFX	C	0.1UF	Z	50V
C512	ECUX1H104ZFX	C	0.1UF	Z	50V
C513	ECUX1H102KBN	C	1000PF	K	50V
C514	ECUX1H104ZFX	C	0.1UF	Z	50V
C515	ECEA1CGN100	E	10UF		16V
C516	ECEA1HGE2R2	E	2.2UF		50V
C517	ECEA1CGE221	E	220UF		16V
C520	ECEA1EGE470	E	47UF		25V
C521	ECEAOJGE471	E	470UF		6.3V
C526	ECEA1HGE3R3	E	3.3UF		50V
C527	ECEA1HGE3R3	E	3.3UF		50V
C528	ECEA1CGE471	E	470UF		16V
C550	ECEA1VGE101	E	100UF		35V
C551	ECEA1VGE470	E	47UF		35V
C552	ECKD2H332KB5	C	3300PF	K	500V
C555	ECKD3F561JBP	C	560PF	J	3KV
C556	TAC4R6T472HC	PP	4700PF	H	1.5KV
C561	TAC7A2G274JC	PP	0.27UF	J	400V
C562	TAC7A2G105JC	PP	1UF	J	400V
C563	TAC7A2G244JC	PP	0.24UF	J	400V
C565	TAC7A2G244JC	PP	0.24UF	J	400V
C566	ECUX1H473ZFM	C	0.047UF	Z	50V
C567	ECUX1H473ZFM	C	0.047UF	Z	50V
C570	ECKC3D821JBP	C	820PF	J	2KV
C571	ECQF6272JZ	PP	2700PF	J	600V
C572	ECQE1335KF	P	3.3UF	K	100V
C573	ECKD2H102KB5	C	1000PF	K	500V
C574	ECKD2H332KB5	C	3300PF	K	500V
C576	ECUX1H103KBG	C	0.01UF	K	50V
C577	ECUX1H103KBG	C	0.01UF	K	50V
C579	ECUX1H222ZFN	C	2200PF	Z	50V
C580	ECEA1CGE470	E	47UF		16V
C581	ECQV1H684JM	P	0.68UF	J	50V
C582	ECUX1H103KBG	C	0.01UF	K	50V
C583	ECUX1C105ZFW	C	1.0UF	Z	16V
C585	ECUX1H103KBG	C	0.01UF	K	50V
C590	ECUX1H102KBN	C	1000PF	K	50V
C601	ECEA2CGE2R2	E	2.2UF		160V
C602	ECQE2474JF	P	0.47UF	J	200V
C603	ECUX1H222KBN	C	2200PF	K	50V
C604	ECEA2AGE220	E	22UF		100V
C605	ECQE10473MU	P	0.047UF	M	1KV
C606	ECEA1HGEO10	E	1UF		50V
C607	ECUX1H102JCX	C	1000PF	J	50V
C608	ECKD2H102KB5	C	1000PF	K	500V
C609	ECKF1H682KB	C	6800PF	K	50V
C611	ECEA2EGE100	E	10UF		250V
C612	ECEA1EGE100	E	10UF		25V
C660	ECEA1EGE470	E	47UF		25V
C661	ECUX1H102JCX	C	1000PF	J	50V
C664	ECKD2H272KB5	C	2700PF	K	500V
C665	ECUX1H121JCG	C	120PF	J	50V
C666	ECUX1H102JCX	C	1000PF	J	50V
C667	ECUX1H221JCG	C	220PF	J	50V
C671	ECUX1C105ZFW	C	1.0UF	Z	16V
C672	ECEA1HGE4R7	E	4.7UF		50V
C674	ECEA1VGE470	E	47UF		35V
C679	ECA1JFQ120	E	12UF		63V
C681	ECEA2DGE101	E	100UF		200V
C701	ECUX1H103KBG	C	0.01UF	K	50V
C702	ECUX1H103KBG	C	0.01UF	K	50V

Ref.No.	Part No.		Description		
C703	ECUX1H103KBG	C	0.01UF	K	50V
C704	ECUX1H103KBG	C	0.01UF	K	50V
C707	ECUX1H103KBG	C	0.01UF	K	50V
C709	ECEA1EGE101	E	100UF		25V
C711	ECUX1H472KBG	C	4700PF	K	50V
C753	ECUX1H103KBG	C	0.01UF	K	50V
⚠ C801	ECQU2A105MVZ	PP	1.0UF	M	250V
⚠ C802	ECKDRS102KB	C	1000PF	K	
⚠ C803	ECKDRS102KB	C	1000PF	K	
⚠ C805	ECQU2A105MVZ	PP	1.0UF	M	250V
C814	TAC7A2G105JC	PP	1UF	J	400V
C815	ECQE4104JF	P	0.1UF	J	400V
C819	ECKD3A101KBP	C	100PF	K	1KV
C820	ECUX1H223KBX	C	0.022UF	K	50V
C821	ECQE2473KF	P	0.047UF	K	200V
C822	ECUX1H222KBN	C	2200PF	K	50V
C823	ECEA1HGE4R7	E	4.7UF		50V
C824	ECEA1HGE100	E	10UF		50V
C825	ECEA1HGE3R3	E	3.3UF		50V
C827	ECUX1H681KBN	C	680PF	K	50V
C828	ECEA1HGE470	E	47UF		50V
C829	ECEA1VGE221	E	220UF		35V
⚠ C832	ECKDRS102KB	C	1000PF	K	
⚠ C834	ECKDRS102KB	C	1000PF	K	
C839	ECEAOJGE331	E	330UF		6.3V
C840	ECEA1HGE4R7	E	4.7UF		50V
C842	ECKD3D151JBP	C	150PF	J	2KV
C844	ECA2CGE221W	E	220UF		160V
C853	ECEA1EGE100	E	10UF		25V
C854	ECQV1H224JM	P	0.22UF	J	50V
C861	ECOS2EB681CA	E	680UF		250V
C862	ECA2CGE221W	E	220UF		160V
C863	ECEA1HGE102	E	1000UF		50V
C864	ECEA1EGE332	E	3300UF		25V
C865	ECEA1CGE102	E	1000UF		16V
C866	ECEA1CGE101	E	100UF		16V
C870	ECEA1HGE101	E	100UF		50V
C871	ECEA1EGE221	E	220UF		25V
C873	ECUX1H104ZFX	C	0.1UF	Z	50V
C874	ECUX1H104ZFX	C	0.1UF	Z	50V
C876	ECEA1HGE221	E	220UF		50V
C877	ECUX1H104ZFX	C	0.1UF	Z	50V
C879	ECEA1AGE101	E	100UF		10V
C890	TACCZ335P630	P	3.3UF	K	630V
C892	ECUX1H104ZFX	C	0.1UF	Z	50V
C896	ECQE6473KF	P	0.047UF	K	600V
C901	ECUX1H220JCN	C	22PF	J	50V
C902	ECEA1AGE101	E	100UF		10V
C903	ECUX1H103KBG	C	0.01UF	K	50V
C905	ECEA1HGEO10	E	1UF		50V
C906	ECUX1H103KBG	C	0.01UF	K	50V
C907	ECUX1H221KBN	C	220PF	K	50V
C908	ECUX1H150JCN	C	15PF	J	50V
C909	ECUX1H150JCN	C	15PF	J	50V
C910	ECUX1H221KBN	C	220PF	K	50V
C911	ECUX1H221KBN	C	220PF	K	50V
C912	ECUX1H333KBX	C	0.033UF	K	50V
C1001	ECEA1EGE100	E	10UF		25V
C1002	ECEA1CGE470	E	47UF		16V
C1003	ECUX1H103KBG	C	0.01UF	K	50V
C1004	ECUX1H103KBG	C	0.01UF	K	50V
C1005	ECQV1H105JM	P	1.0UF	J	50V

Ref.No.	Part No.	Description				Ref.No.	Part No.	Description			
C1006	ECUX1H111JC	C	110PF	J	50V	J014	ERDS2TC0	C	0 OHM		1/4W
C1008	ECEA2CGE220	E	22UF		160V	J015	ERDS2TC0	C	0 OHM		1/4W
C1009	ECUX1H103KBG	C	0.01UF	K	50V	J016	ERDS2TC0	C	0 OHM		1/4W
C1010	ECKD2H102KB5	C	1000PF	K	500V	J018	ERDS2TC0	C	0 OHM		1/4W
C1013	ECUX1H560JCG	C	56PF	J	50V	J022	ERDS2TC0	C	0 OHM		1/4W
C1030	ECUX1H220JCN	C	22PF	J	50V	J023	ERDS2TC0	C	0 OHM		1/4W
C1101	ECEA1EGE100	E	10UF		25V	J025	ERDS2TC0	C	0 OHM		1/4W
C1102	ECEA1CGE470	E	47UF		16V	J102	ERDS2TC0	C	0 OHM		1/4W
C1103	ECUX1H103KBG	C	0.01UF	K	50V	J103	ERDS2TC0	C	0 OHM		1/4W
C1104	ECUX1H103KBG	C	0.01UF	K	50V	J104	ERDS2TC0	C	0 OHM		1/4W
C1105	ECQV1H105JM	P	1.0UF	J	50V	J105	ERDS2TC0	C	0 OHM		1/4W
C1106	ECUX1H111JC	C	110PF	J	50V	J106	ERDS2TC0	C	0 OHM		1/4W
C1109	ECUX1H103KBG	C	0.01UF	K	50V	J114	ERDS2TC0	C	0 OHM		1/4W
C1110	ECKD2H102KB5	C	1000PF	K	500V	J201	ERD25TC0	C	0 OHM		1/4W
C1113	ECUX1H560JCG	C	56PF	J	50V	J202	ERD25TC0	C	0 OHM		1/4W
C1130	ECUX1H220JCN	C	22PF	J	50V	J203	ERD25TC0	C	0 OHM		1/4W
C1201	ECEA1EGE100	E	10UF		25V	J206	ERD25TC0	C	0 OHM		1/4W
C1202	ECEA1CGE470	E	47UF		16V	J207	ERD25TC0	C	0 OHM		1/4W
C1203	ECUX1H103KBG	C	0.01UF	K	50V	J208	ERD25TC0	C	0 OHM		1/4W
C1204	ECUX1H103KBG	C	0.01UF	K	50V	J209	ERD25TC0	C	0 OHM		1/4W
C1205	ECQV1H105JM	P	1.0UF	J	50V	J210	ERD25TC0	C	0 OHM		1/4W
C1206	ECUX1H121JCG	C	120PF	J	50V	J211	ERD25TC0	C	0 OHM		1/4W
C1207	ECEA2AGE2R2	E	2.2UF		100V	J217	ERD25TC0	C	0 OHM		1/4W
C1208	ECEA2AGE2R2	E	2.2UF		100V	J218	ERD25TC0	C	0 OHM		1/4W
C1209	ECUX1H103KBG	C	0.01UF	K	50V	J221	ERD25TC0	C	0 OHM		1/4W
C1210	ECKD2H102KB5	C	1000PF	K	500V	J222	ERD25TC0	C	0 OHM		1/4W
C1213	ECUX1H560JCG	C	56PF	J	50V	J223	ERD25TC0	C	0 OHM		1/4W
C1230	ECUX1H220JCN	C	22PF	J	50V	J224	ERD25TC0	C	0 OHM		1/4W
C1301	ECEA1HGE100	E	10UF		50V	J225	ERD25TC0	C	0 OHM		1/4W
C1302	ECUX1H103KBG	C	0.01UF	K	50V	J226	ERD25TC0	C	0 OHM		1/4W
C1303	ECEA1CGE101	E	100UF		16V	J227	ERD25TC0	C	0 OHM		1/4W
C1304	ECEA1CGE102	E	1000UF		16V	J228	ERD25TC0	C	0 OHM		1/4W
C1305	ECUX1H104ZFX	C	0.1UF	Z	50V	J229	ERD25TC0	C	0 OHM		1/4W
C1306	ECUX1C105ZFW	C	1.0UF	Z	16V	J232	ERD25TC0	C	0 OHM		1/4W
C1307	ECUX1H100DCN	C	10PF	D	50V	J235	ERD25TC0	C	0 OHM		1/4W
C1309	TACCG102P200	C	1000PF		200V	J236	ERD25TC0	C	0 OHM		1/4W
C1310	ECEA2CGE220	E	22UF		160V	J237	ERD25TC0	C	0 OHM		1/4W
C1311	ECUX1H103KBG	C	0.01UF	K	50V	J239	ERD25TC0	C	0 OHM		1/4W
C1312	ECUX1C105ZFW	C	1.0UF	Z	16V	J240	ERD25TC0	C	0 OHM		1/4W
C1314	ECEA1CGE470	E	47UF		16V	J242	ERD25TC0	C	0 OHM		1/4W
C1315	ECUX1H103KBG	C	0.01UF	K	50V	J243	ERD25TC0	C	0 OHM		1/4W
C1316	ECUX1H103KBG	C	0.01UF	K	50V	J244	ERD25TC0	C	0 OHM		1/4W
C1318	ECUX1H103KBG	C	0.01UF	K	50V	J245	ERD25TC0	C	0 OHM		1/4W
C1320	ECUX1H333KBX	C	0.033UF	K	50V	J246	ERD25TC0	C	0 OHM		1/4W
C1321	ECUX1H220JCN	C	22PF	J	50V	J247	ERD25TC0	C	0 OHM		1/4W
C1322	ECUX1H220JCN	C	22PF	J	50V	J249	ERD25TC0	C	0 OHM		1/4W
C1323	ECEA1AGE101	E	100UF		10V	J250	ERD25TC0	C	0 OHM		1/4W
C1324	ECUX1H220JCN	C	22PF	J	50V	J251	ERD25TC0	C	0 OHM		1/4W
C1325	ECEA1CGE101	E	100UF		16V	J252	ERD25TC0	C	0 OHM		1/4W
C1326	ECUX1H683KBW	C	0.068UF	K	50V	J253	ERD25TC0	C	0 OHM		1/4W
C1327	ECEA1HGE100	E	10UF		50V	J254	ERD25TC0	C	0 OHM		1/4W
C1328	ECUX1H101JCG	C	100PF	J	50V	J257	ERD25TC0	C	0 OHM		1/4W
C1329	ECUX1H103KBG	C	0.01UF	K	50V	J258	ERD25TC0	C	0 OHM		1/4W
C1410	ECUX1C105ZFW	C	1.0UF	Z	16V	J304	ERD25TC0	C	0 OHM		1/4W
C1411	ECUX1H682KBG	C	6800PF	K	50V	J305	ERD25TC0	C	0 OHM		1/4W
						J306	ERD25TC0	C	0 OHM		1/4W
	RESISTORS					J307	ERD25TC0	C	0 OHM		1/4W
J11	ERJ6GEY0R00	M	0 OHM		1/10W	J308	ERD25TC0	C	0 OHM		1/4W
J009	ERDS2TC0	C	0 OHM		1/4W	J309	ERD25TC0	C	0 OHM		1/4W
J010	ERDS2TC0	C	0 OHM		1/4W	J311	ERD25TC0	C	0 OHM		1/4W
J011	ERDS2TC0	C	0 OHM		1/4W						
J012	ERDS2TC0	C	0 OHM		1/4W	J316	ERD25TC0	C	0 OHM		1/4W
						J318	ERD25TC0	C	0 OHM		1/4W

Ref.No.	Part No.			Description		
J321	ERD25TCO	C	O	OHM	1/4W	
J323	ERD25TCO	C	O	OHM	1/4W	
J324	ERD25TCO	C	O	OHM	1/4W	
J326	ERD25TCO	C	O	OHM	1/4W	
J328	ERD25TCO	C	O	OHM	1/4W	
J329	ERD25TCO	C	O	OHM	1/4W	
J330	ERD25TCO	C	O	OHM	1/4W	
J331	ERD25TCO	C	O	OHM	1/4W	
J333	ERD25TCO	C	O	OHM	1/4W	
J334	ERD25TCO	C	O	OHM	1/4W	
J335	ERD25TCO	C	O	OHM	1/4W	
J336	ERD25TCO	C	O	OHM	1/4W	
J338	ERD25TCO	C	O	OHM	1/4W	
J339	ERD25TCO	C	O	OHM	1/4W	
J340	ERD25TCO	C	O	OHM	1/4W	
J401	ERJ6GEYOROO	M	O	OHM	1/10W	
J403	ERJ6GEYOROO	M	O	OHM	1/10W	
J404	ERJ6GEYOROO	M	O	OHM	1/10W	
J405	ERJ6GEYOROO	M	O	OHM	1/10W	
J406	ERJ6GEYOROO	M	O	OHM	1/10W	
J407	ERJ6GEYOROO	M	O	OHM	1/10W	
J408	ERJ6GEYOROO	M	O	OHM	1/10W	
J409	ERJ6GEYOROO	M	O	OHM	1/10W	
J410	ERJ6GEYOROO	M	O	OHM	1/10W	
J411	ERJ6GEYOROO	M	O	OHM	1/10W	
J412	ERJ6GEYOROO	M	O	OHM	1/10W	
J414	ERJ6GEYOROO	M	O	OHM	1/10W	
J415	ERJ6GEYOROO	M	O	OHM	1/10W	
J416	ERJ6GEYOROO	M	O	OHM	1/10W	
J418	ERJ6GEYOROO	M	O	OHM	1/10W	
J419	ERJ6GEYOROO	M	O	OHM	1/10W	
J422	ERJ6GEYOROO	M	O	OHM	1/10W	
J424	ERJ6GEYOROO	M	O	OHM	1/10W	
J425	ERJ6GEYOROO	M	O	OHM	1/10W	
J426	ERJ6GEYOROO	M	O	OHM	1/10W	
J429	ERJ6GEYOROO	M	O	OHM	1/10W	
J431	ERJ6GEYOROO	M	O	OHM	1/10W	
J432	ERJ6GEYOROO	M	O	OHM	1/10W	
J434	ERJ6GEYOROO	M	O	OHM	1/10W	
J435	ERJ6GEYOROO	M	O	OHM	1/10W	
J437	ERJ6GEYOROO	M	O	OHM	1/10W	
J440	ERJ6GEYOROO	M	O	OHM	1/10W	
J441	ERJ6GEYOROO	M	O	OHM	1/10W	
J442	ERJ6GEYOROO	M	O	OHM	1/10W	
J501	ERJ8GCYOROO	M	O	OHM	1/8W	
J502	ERJ8GCYOROO	M	O	OHM	1/8W	
J503	ERJ8GCYOROO	M	O	OHM	1/8W	
J504	ERJ8GCYOROO	M	O	OHM	1/8W	
J505	ERJ8GCYOROO	M	O	OHM	1/8W	
J506	ERJ8GCYOROO	M	O	OHM	1/8W	
J507	ERJ8GCYOROO	M	O	OHM	1/8W	
J508	ERJ8GCYOROO	M	O	OHM	1/8W	
J509	ERJ8GCYOROO	M	O	OHM	1/8W	
J510	ERJ8GCYOROO	M	O	OHM	1/8W	
J511	ERJ8GCYOROO	M	O	OHM	1/8W	
J512	ERJ8GCYOROO	M	O	OHM	1/8W	
J513	ERJ8GCYOROO	M	O	OHM	1/8W	
J514	ERJ8GCYOROO	M	O	OHM	1/8W	
J515	ERJ8GCYOROO	M	O	OHM	1/8W	
J516	ERJ8GCYOROO	M	O	OHM	1/8W	
J517	ERJ8GCYOROO	M	O	OHM	1/8W	
J518	ERJ8GCYOROO	M	O	OHM	1/8W	
J519	ERJ8GCYOROO	M	O	OHM	1/8W	
J520	ERJ8GCYOROO	M	O	OHM	1/8W	
J522	ERJ8GCYOROO	M	O	OHM	1/8W	
J523	ERJ8GCYOROO	M	O	OHM	1/8W	
J524	ERJ8GCYOROO	M	O	OHM	1/8W	
J525	ERJ8GCYOROO	M	O	OHM	1/8W	
J526	ERJ8GCYOROO	M	O	OHM	1/8W	
J527	ERJ8GCYOROO	M	O	OHM	1/8W	
J528	ERJ8GCYOROO	M	O	OHM	1/8W	
J529	ERJ8GCYOROO	M	O	OHM	1/8W	
J530	ERJ8GCYOROO	M	O	OHM	1/8W	
J531	ERJ8GCYOROO	M	O	OHM	1/8W	
J532	ERJ8GCYOROO	M	O	OHM	1/8W	
J533	ERJ8GCYOROO	M	O	OHM	1/8W	
J534	ERJ8GCYOROO	M	O	OHM	1/8W	
J535	ERJ8GCYOROO	M	O	OHM	1/8W	
J536	ERJ8GCYOROO	M	O	OHM	1/8W	
J537	ERJ8GCYOROO	M	O	OHM	1/8W	
J538	ERJ8GCYOROO	M	O	OHM	1/8W	
J539	ERJ8GCYOROO	M	O	OHM	1/8W	
J540	ERJ8GCYOROO	M	O	OHM	1/8W	
J541	ERJ8GCYOROO	M	O	OHM	1/8W	
J542	ERJ8GCYOROO	M	O	OHM	1/8W	
J543	ERJ8GCYOROO	M	O	OHM	1/8W	
J544	ERJ8GCYOROO	M	O	OHM	1/8W	
J545	ERJ8GCYOROO	M	O	OHM	1/8W	
J546	ERJ8GCYOROO	M	O	OHM	1/8W	
J547	ERJ8GCYOROO	M	O	OHM	1/8W	
J548	ERJ8GCYOROO	M	O	OHM	1/8W	
J549	ERJ8GCYOROO	M	O	OHM	1/8W	
J550	ERJ8GCYOROO	M	O	OHM	1/8W	
J551	ERJ8GCYOROO	M	O	OHM	1/8W	
J552	ERJ8GCYOROO	M	O	OHM	1/8W	
J553	ERJ8GCYOROO	M	O	OHM	1/8W	
J554	ERJ8GCYOROO	M	O	OHM	1/8W	
J555	ERJ8GCYOROO	M	O	OHM	1/8W	
J556	ERJ8GCYOROO	M	O	OHM	1/8W	
J557	ERJ8GCYOROO	M	O	OHM	1/8W	
J558	ERJ8GCYOROO	M	O	OHM	1/8W	
J559	ERJ8GCYOROO	M	O	OHM	1/8W	
J560	ERJ8GCYOROO	M	O	OHM	1/8W	
J561	ERJ8GCYOROO	M	O	OHM	1/8W	
J562	ERJ8GCYOROO	M	O	OHM	1/8W	
J563	ERJ8GCYOROO	M	O	OHM	1/8W	
J565	ERJ8GCYOROO	M	O	OHM	1/8W	
J567	ERJ8GCYOROO	M	O	OHM	1/8W	
J568	ERJ8GCYOROO	M	O	OHM	1/8W	
J569	ERJ8GCYOROO	M	O	OHM	1/8W	
J572	ERJ8GCYOROO	M	O	OHM	1/8W	
J573	ERJ8GCYOROO	M	O	OHM	1/8W	
J580	ERJ8GCYOROO	M	O	OHM	1/8W	
J1301	ERD25TCO	C	O	OHM	1/4W	
L1001	ERDS2TCO	C	O	OHM	1/4W	
L1003	ERJ8GCYOROO	M	O	OHM	1/8W	
L1103	ERDS2TCO	C	O	OHM	1/4W	
L1103	ERJ8GCYOROO	M	O	OHM	1/8W	
L1201	ERDS2TCO	C	O	OHM	1/4W	
L1203	ERJ8GCYOROO	M	O	OHM	1/8W	
R11	ERJ6ENF1002	M	10K	OHM	F	1/10W
R12	ERJ6ENF4703	M	470K	OHM	F	1/10W
R13	ERJ6ENF1802	M	18K	OHM	F	1/10W
R14	ERJ6ENF3301	M	3.3K	OHM	F	1/10W

Ref.No.	Part No.		Description			
R15	TAR101D0183H	M	18K	OHM	J	1W
R16	ERJ6ENF6800	M	680	OHM	F	1/10W
R17	ERJ6ENF8450	M	845	OHM	F	1/10W
R18	TAR101D0273H	M	27K	OHM	J	1W
R19	ERJ6ENF4702	M	47K	OHM	F	1/10W
R20	ERJ6ENF4702	M	47K	OHM	F	1/10W
R22	ERJ6GEY0R00	M	0	OHM		1/10W
R23	ERJ6GEYJ105	M	1M	OHM	J	1/10W
R24	ERJ6ENF4703	M	470K	OHM	F	1/10W
R25	ERJ6ENF1000	M	100	OHM	F	1/10W
R26	ERJ6GEYJ470	M	47	OHM	J	1/10W
R203	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R204	ERJ6GEYJ272	M	2.7K	OHM	J	1/10W
R205	ERJ6GEYJ106	M	10M	OHM	J	1/10W
R206	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R207	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R208	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R212	ERJ6GEYJ182	M	1.8K	OHM	J	1/10W
R214	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R215	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R217	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R218	ERJ6GEYJ562	M	5.6K	OHM	J	1/10W
R219	ERDS1FJ391	C	390	OHM	J	1/2W
R220	ERDS1FJ331	C	330	OHM	J	1/2W
R221	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R223	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R224	ERJ6ENF2702	M	27K	OHM	F	1/10W
R225	ERJ6ENF2433	M	243K	OHM	F	1/10W
R247	ERJ6GEYJ101	M	100	OHM	J	1/10W
R248	ERJ6GEYJ101	M	100	OHM	J	1/10W
R249	ERJ6GEYJ101	M	100	OHM	J	1/10W
R250	ERJ6GEYJ392	M	3.9K	OHM	J	1/10W
R251	ERJ6GEYJ562	M	5.6K	OHM	J	1/10W
R252	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R281	ERJ8ENF3010	M	301	OHM	F	1/8W
R282	ERJ8ENF3010	M	301	OHM	F	1/8W
R283	ERJ6GEYJ473	M	47K	OHM	J	1/10W
R285	ERJ8ENF3010	M	301	OHM	F	1/8W
R287	ERJ8GCYJ122	M	1.2K	OHM	J	1/8W
R288	ERJ8GCYJ122	M	1.2K	OHM	J	1/8W
R295	ERDS1FJ103	C	10K	OHM	J	1/2W
R301	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R302	ERJ6GEYJ152	M	1.5K	OHM	J	1/10W
R303	ERJ6GEYJ223	M	22K	OHM	J	1/10W
R304	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R305	ERJ6ENF3402	M	34K	OHM	F	1/10W
R306	ERJ6ENF2003	M	200K	OHM	F	1/10W
R307	ERDS1FJ681	C	680	OHM	J	1/2W
R308	ERJ6GEYJ153	M	15K	OHM	J	1/10W
R309	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R310	ERJ8GCYJ102	M	1K	OHM	J	1/8W
R311	ERJ6GEYJ153	M	15K	OHM	J	1/10W
R313	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R316	ERDS1FJ274	C	270K	OHM	J	1/2W
R317	ERDS1FJ274	C	270K	OHM	J	1/2W
R318	ERDS2TJ224	C	220K	OHM	J	1/4W
R319	ERJ6GEYJ821	M	820	OHM	J	1/10W
R320	ERJ8GCYJ822	M	8.2K	OHM	J	1/8W
R321	ERDS1FJ153	C	15K	OHM	J	1/2W
R322	ERDS2TJ102	C	1K	OHM	J	1/4W
R334	ERDS1FJ274	C	270K	OHM	J	1/2W
R336	ERDS1FJ125	C	1.2M	OHM	J	1/2W
R337	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R346	ERJ6ENF3832	M	38.3K	OHM	F	1/10W
R347	ERJ6ENF3922	M	39.2K	OHM	F	1/10W
R348	ERJ6ENF1213	M	121K	OHM	F	1/10W
R363	ERDS1FJ151	C	150	OHM	J	1/2W
R371	ERJ6ENF1622	M	16.2K	OHM	F	1/10W
R372	ERJ6ENF1002	M	10K	OHM	F	1/10W
R373	ERJ6ENF7681	M	7.68K	OHM	F	1/10W
R374	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R375	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R376	ERJ6ENF5622	M	56.2K	OHM	F	1/10W
R377	ERJ6ENF1102	M	11K	OHM	F	1/10W
R378	ERJ6ENF1213	M	121K	OHM	F	1/10W
R379	ERJ6ENF1782	M	17.8K	OHM	F	1/10W
R380	ERDS2TJ121	C	120	OHM	J	1/4W
R381	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R390	ERJ8GCY0R00	M	0	OHM		1/8W
R391	ERJ8GCY0R00	M	0	OHM		1/8W
R392	ERJ8GCY0R00	M	0	OHM		1/8W
R393	ERJ8GCY0R00	M	0	OHM		1/8W
R400	ERD25FJ472K	C	4.7K	OHM	J	1/4W
R401	ERJ6GEYJ470	M	47	OHM	J	1/10W
R403	ERJ6ENF8252	M	82.5K	OHM	F	1/10W
R405	ERQ14AJ220	F	22	OHM	J	1/4W
R407	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R408	ERJ6ENF5621	M	5.62K	OHM	F	1/10W
R409	ERJ8ENF1822	M	18.2K	OHM	F	1/8W
R410	ERJ6ENF3651	M	3.65K	OHM	F	1/10W
R411	ERJ6ENF2741	M	2.74K	OHM	F	1/10W
R412	ERJ6ENF8251	M	8.25K	OHM	F	1/10W
R413	ERJ6ENF2211	M	2.21K	OHM	F	1/10W
R414	ERJ6ENF1961	M	1.96K	OHM	F	1/10W
R415	ERDS2TJ472	C	4.7K	OHM	J	1/4W
R416	ERJ6GEYJ122	M	1.2K	OHM	J	1/10W
R417	ERDS2TJ472	C	4.7K	OHM	J	1/4W
R418	EROS2CKF2151	M	2.15K	OHM	F	1/4W
R419	ERJ8GCYJ272	M	2.7K	OHM	J	1/8W
R422	ERG1SJ331	M	330	OHM	J	1W
R423	ERX2SJR82	M	0.82	OHM	J	2W
R424	ERDS1FJ392	C	3.9K	OHM	J	1/2W
R425	ERJ8GCY0R00	M	0	OHM		1/8W
R426	EROS2CKF4421	M	4.42K	OHM	F	1/4W
R427	ERDS2TJ1R5	C	1.5	OHM	J	1/4W
R428	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R429	ERQ1CJP4R7S	F	4.7	OHM	J	1W
R431	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W
R493	ERG2SJ680	M	68	OHM	J	2W
R494	ERD25FJ3R3K	C	3.3	OHM	J	1/4W
R495	ERD25FJ3R3K	C	3.3	OHM	J	1/4W
R496	ERG3FJ680	M	68	OHM	J	3W
R497	ERDS2TJ332	C	3.3K	OHM	J	1/4W
R498	ERG3FJ470	M	47	OHM	J	3W
R500	ERJ6ENF4221	M	4.22K	OHM	F	1/10W
R502	ERJ6ENF5111	M	5.11K	OHM	F	1/10W
R503	ERJ6GEYJ332	M	3.3K	OHM	J	1/10W
R504	ERJ6GEYJ272	M	2.7K	OHM	J	1/10W
R506	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R507	ERJ6GEY0R00	M	0	OHM		1/10W
R508	ERD25FJ392K	C	3.9K	OHM	J	1/4W
R510	ERJ6GEY0R00	M	0	OHM		1/10W
R516	ERJ6GEYJ332	M	3.3K	OHM	J	1/10W
R526	ERJ6ENF2211	M	2.21K	OHM	F	1/10W

Ref.No.	Part No.	Description					Ref.No.	Part No.	Description				
R527	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W	R613	ERJ12YJ564	M	560K	OHM	J	1/2W
R528	ERJ6ENF8200	M	820	OHM	F	1/10W	R614	ERJ12YJ184	M	180K	OHM	J	1/2W
R534	ERD25FJ103K	C	10K	OHM	J	1/4W	R615	ERJ6GEYJ392	M	3.9K	OHM	J	1/10W
R535	ERX1SJR22	M	0.22	OHM	J	1W	R616	ERJ6GEYJ123	M	12K	OHM	J	1/10W
R536	ERD25FJ103K	C	10K	OHM	J	1/4W	R617	ERJ6ENF3091	M	3.09K	OHM	F	1/10W
R537	ERJ6ENF5600	M	560	OHM	F	1/10W	R618	ERJ12YJ105	M	1M	OHM	J	1/2W
R538	ERJ6ENF1433	M	143K	OHM	F	1/10W	R620	ERJ8GCYJ474	M	470K	OHM	J	1/8W
R540	ERJ12YJ101	M	100	OHM	J	1/2W	R621	ERDS2TJ125	C	1.2M	OHM	J	1/4W
R541	ERJ6GEYJ683	M	68K	OHM	J	1/10W	R622	ERJ6GEYJ223	M	22K	OHM	J	1/10W
R542	ERJ6ENF3241	M	3.24K	OHM	F	1/10W	R623	ERJ8ENF1102	M	11K	OHM	F	1/8W
R543	ERJ6GEYJ563	M	56K	OHM	J	1/10W	R624	EROS2CKF1211	M	1.21K	OHM	F	1/4W
R544	ERJ8ENF1332	M	13.3K	OHM	F	1/8W	R625	ERJ6ENF2211	M	2.21K	OHM	F	1/10W
R545	TARRS5B820J2	M	82	OHM	J	5W	R627	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R546	TARRS5B561J2	M	560	OHM	J	5W	R628	ERJ6GEYJ105	M	1M	OHM	J	1/10W
R547	ERJ6GEYJ470	M	47	OHM	J	1/10W	R629	ERJ6GEYJ101	M	100	OHM	J	1/10W
R548	ERJ6GEYJ332	M	3.3K	OHM	J	1/10W	R630	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R549	ERG1SJ561	M	560	OHM	J	1W	R631	ERJ6GEYJ123	M	12K	OHM	J	1/10W
R550	ERQ12AJR12HK	F	0.12	OHM	J	1/2W	R632	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R551	ERX2SJ1R5	M	1.5	OHM	J	2W	R643	ERJ6GEYOROO	M	0	OHM		1/10W
R552	ERX2SJ1R8	M	1.8	OHM	J	2W	R644	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R553	ERJ6GEYJ103	M	10K	OHM	J	1/10W	R645	ERJ8GCYJ222	M	2.2K	OHM	J	1/8W
R554	ERX3FJX6R8D	M	6.8	OHM	J	3W	R648	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R555	ERD25FJ103K	C	10K	OHM	J	1/4W	R650	ERJ6GEYJ471	M	470	OHM	J	1/10W
R556	ERJ6GEYJ332	M	3.3K	OHM	J	1/10W	R660	ERJ8ENF5110	M	511	OHM	F	1/8W
R557	ERJ6GEYJ103	M	10K	OHM	J	1/10W	R661	ERJ6GEYJ823	M	82K	OHM	J	1/10W
R558	ERJ6GEYJ103	M	10K	OHM	J	1/10W	R662	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R559	ERJ6GEYJ102	M	1K	OHM	J	1/10W	R663	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R560	ERDS1FJ472	C	4.7K	OHM	J	1/2W	R664	ERJ8GCYJ103	M	10K	OHM	J	1/8W
R561	ERJ6GEYJ100	M	10	OHM	J	1/10W	R665	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R562	ERJ6GEYJ472	M	4.7K	OHM	J	1/10W	R666	ERJ6GEYJ562	M	5.6K	OHM	J	1/10W
R564	ERJ6GEYJ100	M	10	OHM	J	1/10W	R667	ERJ6GEYJ222	M	2.2K	OHM	J	1/10W
R565	ERDS1FJ472	C	4.7K	OHM	J	1/2W	R668	ERJ8GCYJ104	M	100K	OHM	J	1/8W
R566	ERJ8GCYJ472	M	4.7K	OHM	J	1/8W	R669	ERJ6GEYJ392	M	3.9K	OHM	J	1/10W
R575	ERDS1FJ221	C	220	OHM	J	1/2W	R670	ERDS1FJ104	C	100K	OHM	J	1/2W
R576	ERJ6ENF1622	M	16.2K	OHM	F	1/10W	R671	ERJ6GEYJ562	M	5.6K	OHM	J	1/10W
R577	ERJ6ENF4121	M	4.12K	OHM	F	1/10W	R672	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R578	ERJ6GEYJ102	M	1K	OHM	J	1/10W	R674	ERDS1FJ391	C	390	OHM	J	1/2W
R581	ERD25FJ470K	C	47	OHM	J	1/4W	R675	ERQ14AJ101	F	100	OHM	J	1/4W
R585	ERDS2TJ101	C	100	OHM	J	1/4W	R676	ERQ14AJ101	F	100	OHM	J	1/4W
R586	ERDS2TJ101	C	100	OHM	J	1/4W	R678	ERDS1FJ220	C	22	OHM	J	1/2W
R587	ERDS2TJ332	C	3.3K	OHM	J	1/4W	R679	ERJ6GEYJ104	M	100K	OHM	J	1/10W
R588	TARRS5B150J2	M	15	OHM	J	5W	R680	ERJ6GEYJ104	M	100K	OHM	J	1/10W
R589	TARRS5B150J2	M	15	OHM	J	5W	R682	ERJ6GEYJ101	M	100	OHM	J	1/10W
R590	ERJ6ENF2491	M	2.49K	OHM	F	1/10W	R683	ERJ6GEYJ822	M	8.2K	OHM	J	1/10W
R591	ERJ6GEYJ272	M	2.7K	OHM	J	1/10W	R701	ERJ6GEYJ392	M	3.9K	OHM	J	1/10W
R592	ERJ6GEYJ103	M	10K	OHM	J	1/10W	R702	ERJ6GEYJ392	M	3.9K	OHM	J	1/10W
R593	ERG2SG393	M	39K	OHM	G	2W	R703	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R594	ERDS2TJ121	C	120	OHM	J	1/4W	R715	ERJ6GEYJ392	M	3.9K	OHM	J	1/10W
R595	ERDS1FJ1R8	C	1.8	OHM	J	1/2W	R719	ERJ6GEYJ392	M	3.9K	OHM	J	1/10W
R596	ERJ6GEYJ332	M	3.3K	OHM	J	1/10W	R721	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R598	ERJ6GEYOROO	M	0	OHM		1/10W	R724	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R601	ERQ12AJ101	F	100	OHM	J	1/2W	R801	ERC12AGK394	S	390K	OHM	K	1/2W
R602	ERQ14AJ100	F	10	OHM	J	1/4W	R802	ERJ6GEYJ273	M	27K	OHM	J	1/10W
R603	ERJ8GCYOROO	M	0	OHM		1/8W	R804	ERJ8GCYJ471	M	470	OHM	J	1/8W
R605	ERD25FJ100K	C	10	OHM	J	1/4W	R805	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R606	ERDS1FJ184	C	180K	OHM	J	1/2W	R807	ERJ8GCYJ562	M	5.6K	OHM	J	1/8W
R607	ERDS1FJ184	C	180K	OHM	J	1/2W	R808	ERJ6GEYJ471	M	470	OHM	J	1/10W
R608	ERDS1FJ184	C	180K	OHM	J	1/2W	R809	ERDS1FJ223	C	22K	OHM	J	1/2W
R609	ERDS1FJ184	C	180K	OHM	J	1/2W	R810	ERJ6GEYJ391	M	390	OHM	J	1/10W
R610	ERDS1FJ184	C	180K	OHM	J	1/2W	R811	ERDS1FJ224	C	220K	OHM	J	1/2W
R611	ERG1SJ683	M	68K	OHM	J	1W	R812	ERDS1FJ274	C	270K	OHM	J	1/2W
R612	ERJ12YJ274	M	270K	OHM	J	1/2W	R813	ERJ6GEYJ152	M	1.5K	OHM	J	1/10W

Ref.No.	Part No.		Description				Ref.No.	Part No.		Description			
R814	ERJ6GEYJ151	M	150	OHM	J	1/10W	R904	ERJ8GCYOROO	M	O	OHM		1/8W
R815	ERJ6GEYJ681	M	680	OHM	J	1/10W	R905	ERJ8GCYOROO	M	O	OHM		1/8W
R816	ERJ6ENF2551	M	2.55K	OHM	F	1/10W	R906	ERJ8GCYJ103	M	10K	OHM	J	1/8W
R817	ERQ12AJ6R8	F	6.8	OHM	J	1/2W	R907	ERJ6GEYJ104	M	100K	OHM	J	1/10W
R818	ERJ6GEYOROO	M	O	OHM		1/10W	R908	ERJ8GCYJ102	M	1K	OHM	J	1/8W
R819	ERDS2TJ224	C	220K	OHM	J	1/4W	R909	ERJ8GCYJ103	M	10K	OHM	J	1/8W
R820	ERDS2TJ224	C	220K	OHM	J	1/4W	R910	ERJ8GCYJ563	M	56K	OHM	J	1/8W
R821	TARRS3B333J2	M	33K	OHM	J	3W	R911	ERJ8GCYJ563	M	56K	OHM	J	1/8W
R822	ERJ6GEYJ182	M	1.8K	OHM	J	1/10W	R912	ERJ8GCYJ563	M	56K	OHM	J	1/8W
R823	ERJ6GEYJ102	M	1K	OHM	J	1/10W	R913	ERJ8GCYJ563	M	56K	OHM	J	1/8W
R824	ERJ8GCYJ681	M	680	OHM	J	1/8W	R914	ERJ6GEYJ563	M	56K	OHM	J	1/10W
R825	ERJ6GEYJ821	M	820	OHM	J	1/10W	R915	ERJ6GEYJ563	M	56K	OHM	J	1/10W
R829	ERJ6GEYJ102	M	1K	OHM	J	1/10W	R916	ERJ6GEYJ563	M	56K	OHM	J	1/10W
R833	ERJ6GEYJ102	M	1K	OHM	J	1/10W	R918	ERJ6GEYJ101	M	100	OHM	J	1/10W
R834	ERW2PKR12	W	0.12	OHM	K	2W	R919	ERJ8GCYOROO	M	O	OHM		1/8W
R836	ERG2SJ223	M	22K	OHM	J	2W	R923	ERDS2TJ103	C	10K	OHM	J	1/4W
R837	ERG2SJ223	M	22K	OHM	J	2W	R930	ERJ8GCYJ103	M	10K	OHM	J	1/8W
R838	ERJ6GEYJ102	M	1K	OHM	J	1/10W	R931	ERJ8GCYJ103	M	10K	OHM	J	1/8W
R839	ERDS1FJ223	C	22K	OHM	J	1/2W	R932	ERJ6GEYJ101	M	100	OHM	J	1/10W
R841	ERQ12AJR33HK	F	0.33	OHM	J	1/2W	R933	ERJ6GEYJ101	M	100	OHM	J	1/10W
R842	ERQ12HJ1R2	F	1.2	OHM	J	1/2W	R937	ERJ6GEYJ102	M	1K	OHM	J	1/10W
R843	ERQ12AJR12HK	F	0.12	OHM	J	1/2W	R940	ERJ6GEYJ223	M	22K	OHM	J	1/10W
R844	ERQ12AJR12HK	F	0.12	OHM	J	1/2W	R941	ERJ6GEYJ223	M	22K	OHM	J	1/10W
R845	TAR18BKOR11Z	F	0.11	OHM	K	1/4W	R943	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R846	ERDS1FJ221	C	220	OHM	J	1/2W	R946	ERJ6GEYJ101	M	100	OHM	J	1/10W
R847	ERJ12YJ122	M	1.2K	OHM	J	1/2W	R947	ERJ6GEYJ331	M	330	OHM	J	1/10W
R849	ERJ6GEYJ473	M	47K	OHM	J	1/10W	R949	ERJ8GCYJ223	M	22K	OHM	J	1/8W
R850	ERO25CKF2201	M	2.2K	OHM	F	1/4W	R950	ERJ8GCYJ223	M	22K	OHM	J	1/8W
R851	ERQ14AJO10HK	F	1	OHM	J	1/4W	R951	ERJ6GEYJ223	M	22K	OHM	J	1/10W
R852	ERJ6GEYJ103	M	10K	OHM	J	1/10W	R952	ERJ6GEYJ223	M	22K	OHM	J	1/10W
R854	ERG3FJ330	M	33	OHM	J	3W	R962	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R855	ERJ6ENF2101	M	2.1K	OHM	F	1/10W	R963	ERJ6GEYJ103	M	10K	OHM	J	1/10W
R857	ERJ6GEYJ683	M	68K	OHM	J	1/10W	R969	ERJ6GEYJ334	M	330K	OHM	J	1/10W
R858	ERDS1FJ222	C	2.2K	OHM	J	1/2W	R970	ERJ6GEYJ334	M	330K	OHM	J	1/10W
R859	ERDS1FJ222	C	2.2K	OHM	J	1/2W	R971	ERJ6GEYJ334	M	330K	OHM	J	1/10W
R860	ERJ6GEYJ103	M	10K	OHM	J	1/10W	R973	ERJ8GCYJ103	M	10K	OHM	J	1/8W
R862	ERJ6ENF1302	M	13K	OHM	F	1/10W	R974	ERJ8GCYJ103	M	10K	OHM	J	1/8W
R863	ERDS1FJ332	C	3.3K	OHM	J	1/2W	R975	ERJ8GCYJ103	M	10K	OHM	J	1/8W
R864	ERG2SJ223	M	22K	OHM	J	2W	R977	ERJ6GEYJ223	M	22K	OHM	J	1/10W
R865	ERJ6GEYOROO	M	O	OHM		1/10W	R978	ERJ6GEYJ392	M	3.9K	OHM	J	1/10W
R867	ERJ6ENF3741	M	3.74K	OHM	F	1/10W	R979	ERJ6GEYJ392	M	3.9K	OHM	J	1/10W
R868	ERJ6ENF6651	M	6.65K	OHM	F	1/10W	R980	ERJ6GEYJ273	M	27K	OHM	J	1/10W
R869	ERJ6ENF4221	M	4.22K	OHM	F	1/10W	R981	ERJ6GEYJ333	M	33K	OHM	J	1/10W
R871	ERJ12YJ104	M	100K	OHM	J	1/2W	R982	ERJ6GEYJ101	M	100	OHM	J	1/10W
R872	ERJ12YJ104	M	100K	OHM	J	1/2W	R983	ERJ6GEYJ101	M	100	OHM	J	1/10W
R875	ERDS1FJ224	C	220K	OHM	J	1/2W	R984	ERJ6GEYJ101	M	100	OHM	J	1/10W
R887	EROS2CKF6801	M	6.8K	OHM	F	1/4W	R985	ERJ6GEYJ101	M	100	OHM	J	1/10W
R888	ERJ8GCYJ472	M	4.7K	OHM	J	1/8W	R986	ERDS2TJ331	C	330	OHM	J	1/4W
R889	ERDS1FJ683	C	68K	OHM	J	1/2W	R993	ERJ6GEYOROO	M	O	OHM		1/10W
R890	ERX3FJX1R6D	M	1.6	OHM	J	3W	R1002	ERJ8ENF75RO	M	75	OHM	F	1/8W
R891	ERDS1FJ224	C	220K	OHM	J	1/2W	R1004	ERJ6GEYJ330	M	33	OHM	J	1/10W
R892	ERDS1FJ334	C	330K	OHM	J	1/2W	R1005	ERJ6GEYOROO	M	O	OHM		1/10W
R893	ERDS1FJ334	C	330K	OHM	J	1/2W	R1007	ERJ6ENF29R4	M	29.4	OHM	F	1/10W
R895	ERJ6GEYJ102	M	1K	OHM	J	1/10W	R1008	ERJ6ENF7320	M	732	OHM	F	1/10W
R896	ERJ6GEYJ102	M	1K	OHM	J	1/10W	R1009	ERJ6ENF3900	M	390	OHM	F	1/10W
R897	ERDS1FJ334	C	330K	OHM	J	1/2W	R1010	ERJ6ENF5600	M	560	OHM	F	1/10W
R898	ERDS1FJ470	C	47	OHM	J	1/2W	R1011	ERJ6GEYJ300	M	30	OHM	J	1/10W
R899	ERDS1FJ224	C	220K	OHM	J	1/2W	R1012	ERDS2TJ101	C	100	OHM	J	1/4W
R900	ERDS1FJ334	C	330K	OHM	J	1/2W	R1013	ERO25CKF4702	M	47K	OHM	F	1/4W
R901	ERJ6GEYJ103	M	10K	OHM	J	1/10W	R1014	EROS2CKF3091	M	3.09K	OHM	F	1/4W
R902	ERJ6GEYJ682	M	6.8K	OHM	J	1/10W	R1015	ERJ6ENF6811	M	6.81K	OHM	F	1/10W
R903	ERJ6GEYJ102	M	1K	OHM	J	1/10W	R1018	ERDS1FJ820	C	82	OHM	J	1/2W

Ref.No.	Part No.	Description				Ref.No.	Part No.	Description			
R1019	ERG2SJ123	M	12K OHM	J	2W	R1305	ERJ6ENF1002	M	10K OHM	F	1/10W
R1020	ERJ6ENF1002	M	10K OHM	F	1/10W	R1306	ERJ6ENF1002	M	10K OHM	F	1/10W
R1021	ERJ6ENF1002	M	10K OHM	F	1/10W	R1307	ERJ6GEYJ271	M	270 OHM	J	1/10W
R1022	ERDS1FJ220	C	22 OHM	J	1/2W	R1308	ERJ6GEYJ102	M	1K OHM	J	1/10W
R1023	ERDS2TJ102	C	1K OHM	J	1/4W	R1312	ERJ6GEYJ102	M	1K OHM	J	1/10W
R1024	ERJ6GEYJ822	M	8.2K OHM	J	1/10W	R1313	ERJ6GEYJ102	M	1K OHM	J	1/10W
R1025	ERJ6ENF1202	M	12K OHM	F	1/10W	R1314	ERJ6GEYJ331	M	330 OHM	J	1/10W
R1026	EROS2CKF2262	M	22.6K OHM	F	1/4W	R1315	ERJ6GEYJ474	M	470K OHM	J	1/10W
R1027	ERJ6ENF1002	M	10K OHM	F	1/10W	R1316	ERJ6GEYJ222	M	2.2K OHM	J	1/10W
R1028	ERJ6GEYJ472	M	4.7K OHM	J	1/10W	R1317	ERJ6ENF9101	M	9.1K OHM	F	1/10W
R1030	ERJ6GEYOROO	M	0 OHM		1/10W	R1318	ERJ6GEYJ682	M	6.8K OHM	J	1/10W
R1102	ERJ8ENF75RO	M	75 OHM	F	1/8W	R1320	ERJ6ENF2701	M	2.7K OHM	F	1/10W
R1104	ERJ6GEYJ330	M	33 OHM	J	1/10W	R1322	ERJ6GEYJ100	M	10 OHM	J	1/10W
R1107	ERJ6ENF23R7	M	23.7 OHM	F	1/10W	R1324	ERJ6GEYJ103	M	10K OHM	J	1/10W
R1108	ERJ6ENF7320	M	732 OHM	F	1/10W	R1325	ERJ6GEYJ223	M	22K OHM	J	1/10W
R1109	ERJ6ENF3900	M	390 OHM	F	1/10W	R1326	ERJ6GEYJ223	M	22K OHM	J	1/10W
R1110	ERJ6ENF5600	M	560 OHM	F	1/10W	R1327	ERJ6GEYJ103	M	10K OHM	J	1/10W
R1111	ERJ6GEYJ390	M	39 OHM	J	1/10W	R1328	ERJ6GEYJ102	M	1K OHM	J	1/10W
R1112	ERDS1FJ820	C	82 OHM	J	1/2W	R1329	ERJ6GEYJ102	M	1K OHM	J	1/10W
R1113	ERO25CKF4702	M	47K OHM	F	1/4W	R1330	ERJ6ENF8251	M	8.25K OHM	F	1/10W
R1114	EROS2CKF3091	M	3.09K OHM	F	1/4W	R1331	ERJ6ENF1502	M	15K OHM	F	1/10W
R1115	ERJ6ENF6811	M	6.81K OHM	F	1/10W	R1332	ERJ6ENF1002	M	10K OHM	F	1/10W
R1118	ERDS1FJ820	C	82 OHM	J	1/2W	R1333	ERJ8GCYJ681	M	680 OHM	J	1/8W
R1119	ERG2SJ123	M	12K OHM	J	2W	R1334	ERJ6GEYJ101	M	100 OHM	J	1/10W
R1120	ERJ6ENF1002	M	10K OHM	F	1/10W	R1335	ERJ12YJ102	M	1K OHM	J	1/2W
R1121	ERJ6ENF1002	M	10K OHM	F	1/10W	R1336	ERJ6GEYJ102	M	1K OHM	J	1/10W
R1122	ERDS1FJ220	C	22 OHM	J	1/2W	R1337	ERJ6GEYJ101	M	100 OHM	J	1/10W
R1123	ERDS2TJ102	C	1K OHM	J	1/4W	R1338	ERJ6GEYJ101	M	100 OHM	J	1/10W
R1124	ERJ6GEYJ822	M	8.2K OHM	J	1/10W	R1339	ERJ6GEYJ101	M	100 OHM	J	1/10W
R1125	ERJ6ENF1202	M	12K OHM	F	1/10W	R1401	ERJ6GEYJ331	M	330 OHM	J	1/10W
R1126	EROS2CKF2262	M	22.6K OHM	F	1/4W	R1402	ERJ6ENF2702	M	27K OHM	F	1/10W
R1127	ERJ6ENF1002	M	10K OHM	F	1/10W	R1403	ERJ6ENF3301	M	3.3K OHM	F	1/10W
R1128	ERJ6GEYJ472	M	4.7K OHM	J	1/10W	R1404	ERJ6ENF2212	M	22.1K OHM	F	1/10W
R1130	ERJ6GEYOROO	M	0 OHM		1/10W	R1405	ERJ6ENF5621	M	5.62K OHM	F	1/10W
R1131	ERJ8GCYJ330	M	33 OHM	J	1/8W	R1408	ERJ6ENF1002	M	10K OHM	F	1/10W
R1202	ERJ8ENF75RO	M	75 OHM	F	1/8W	R1409	ERJ6ENF1002	M	10K OHM	F	1/10W
R1204	ERJ6GEYJ330	M	33 OHM	J	1/10W	R1410	ERJ6GEYJ124	M	120K OHM	J	1/10W
R1205	ERJ6GEYJ682	M	6.8K OHM	J	1/10W	R1411	ERJ6GEYJ101	M	100 OHM	J	1/10W
R1207	ERJ6ENF66R5	M	66.5 OHM	F	1/10W						
R1208	ERJ6ENF7320	M	732 OHM	F	1/10W		OTHERS				
R1209	ERJ6ENF3900	M	390 OHM	F	1/10W		TMKKOO1	TAPE			
R1210	ERJ6ENF5600	M	560 OHM	F	1/10W		TMK87907	MICA SHEET			
R1211	ERJ6GEYJ220	M	22 OHM	J	1/10W		TUC87574	AC INLET BRACKET			
R1212	ERDS2TJ331	C	330 OHM	J	1/4W		XTV3+12J	SCREW			
R1213	ERO25CKF4702	M	47K OHM	F	1/4W		XTV3+16J	SCREW			
R1214	EROS2CKF3091	M	3.09K OHM	F	1/4W		XWGT40660	WASHER			
R1215	ERJ6ENF6811	M	6.81K OHM	F	1/10W		XWG3F10	WASHER			
R1218	ERDS1FJ820	C	82 OHM	J	1/2W	⚠ F801	XBA2C31TB15L	FUSE(3.15A)			
R1219	ERG2SJ123	M	12K OHM	J	2W	FG1	TJE85318	LUG TERMINAL			
R1220	ERJ6ENF1002	M	10K OHM	F	1/10W	FG2	TJC85341	EARTH LUG			
R1221	ERJ6ENF1002	M	10K OHM	F	1/10W	FG3	TJC85341	EARTH LUG			
R1222	ERDS1FJ220	C	22 OHM	J	1/2W	FG4	TJC85341	EARTH LUG			
R1223	ERDS2TJ102	C	1K OHM	J	1/4W	FG6	TJC85341	EARTH LUG			
R1224	ERJ6GEYJ822	M	8.2K OHM	J	1/10W	FS801	TJC85502T	FUSE HOLDER			
R1225	ERJ6ENF1202	M	12K OHM	F	1/10W	FS803	TJC85502T	FUSE HOLDER			
R1226	EROS2CKF2262	M	22.6K OHM	F	1/4W	JC101	TJC85341	EARTH LUG			
R1227	ERJ6ENF1002	M	10K OHM	F	1/10W	JC102	TJC85341	EARTH LUG			
R1228	ERJ6GEYJ472	M	4.7K OHM	J	1/10W	N7A	TJS9A8730	10P CONNECTOR			
R1230	ERJ6GEYOROO	M	0 OHM		1/10W	N7B	TJS9A8730	10P CONNECTOR			
R1301	ERJ6GEYJ472	M	4.7K OHM	J	1/10W	N11	TJSF00602	2P CONNECTOR			
R1302	ERJ6GEYJ102	M	1K OHM	J	1/10W	N12	TJSF00603	3P CONNECTOR			
R1303	ERJ6GEYJ753	M	75K OHM	J	1/10W	N12A	TJS9A8740	22P CONNECTOR			

Ref.No.	Part No.	Description		Ref.No.	Part No.	Description
N12B	TJS9A8740	22P CONNECTOR				
N13	TJSF00604	4P CONNECTOR				
N103	TJS8A9880	15P CONNECTOR				
N104A	EMCS0364M	3P CONNECTOR				
N104B-	TXAJTV3P1663	3P CONNECTOR ASSY				
N106	TJC85342T	LUG TERMINAL				
N107A	EMCS0251ML	2P CONNECTOR(L-TYPE)				
N381	TJS1A5280	CRT SOCKET				
⚠ N801	TJS8A9361	AC SOCKET				
N901	EMCS0451ML	4P CONNECTOR(L-TYPE)				
N510-1	TEL302-9	TERMINAL				
N510-2	TEL302-9	TERMINAL				
N510-3	TEL302-9	TERMINAL				
N510-4	TEL302-9	TERMINAL				
N802-1	TEL302-9	TERMINAL				
N802-2	TEL302-9	TERMINAL				
⚠ PC830	PC123FY8	PHOTO COUPLER				
⚠ PC831	PC123FY8	PHOTO COUPLER				
⚠ PC832	TLP750D4	PHOTO COUPLER				
S290	TAG10003	SPARK GAP				
S301	TGPS152GL	SPARK GAP				
S601	TAGDSP201MB	SPARK GAP				
S1001	TAGDSP141TTA	SPARK GAP				
S1101	TAGDSP141TTA	SPARK GAP				
S1201	TAGDSP141TTA	SPARK GAP				
⚠ SW801	ESB91231A	SWITCH(POWER)				
SW901	EVQPB005K	SWITCH				
SW902	EVQPB005K	SWITCH				
SW903	EVQPB005K	SWITCH				
SW904	EVQPB005K	SWITCH				
TP1	TEL302-9	TERMINAL				
TP2	TEL302-9	TERMINAL				
TP3	TEL302-9	TERMINAL				
TP4	TEL302-9	TERMINAL				
TP5	TEL302-9	TERMINAL				
X901	TSS2165TM	CRYSTAL OSCILLATOR				